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Hanley

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(54) **CURVED SHOWER ROD WITH OBLONG BRACKETS AND CENTER SCREW**

(71) Applicant: **Kenney Manufacturing Company,**
Warwick, RI (US)

(72) Inventor: **Michael Hanley,** Smithfield, RI (US)

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A47K 3/00 (2006.01)
A47K 3/38 (2006.01)

(52) **U.S. Cl.**
CPC **A47K 3/38** (2013.01); **A47K 3/00** (2013.01)

(58) **Field of Classification Search**
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USPC 4/614, 596–613
See application file for complete search history.

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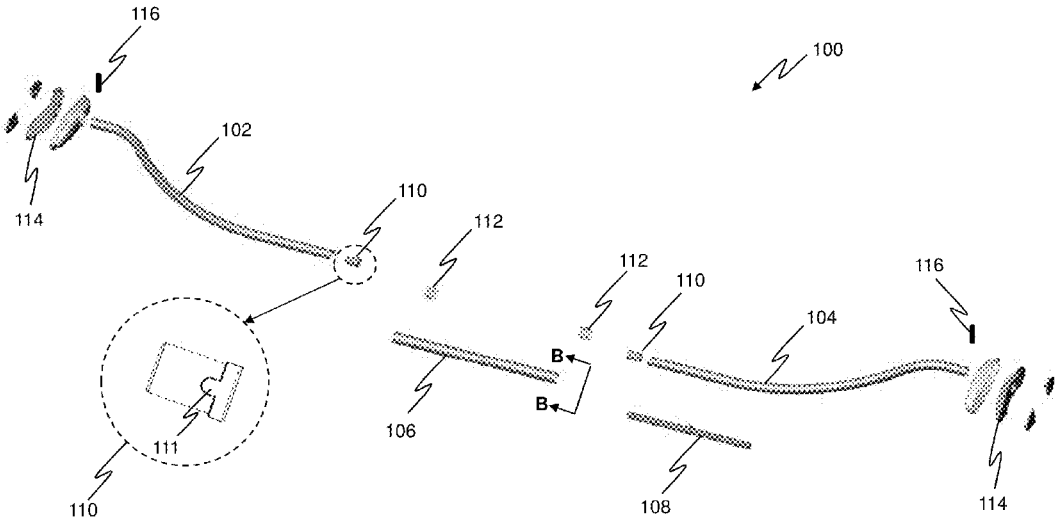
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Primary Examiner — Lori Baker
(74) Attorney, Agent, or Firm — Steven M McHugh

(57) **ABSTRACT**

A curved shower rod assembly is provided and includes a first end rod and a second end rod, wherein each of the first end rod and second end rod include a rod bracket end and a rod interface end, the rod bracket end and rod interface end being separated by a rod curved portion. A center rod is also included, wherein the center rod is hollow and includes a center rod inner diameter sized to movably contain the rod interface ends. Additionally, a screw rod having a first end with right-hand threads and a second end with left-hand threads is also provided, wherein the screw rod is securely contained within the center rod. A first mounting bracket and a second mounting bracket are also included, wherein each of the first and second mounting brackets are oblong in shape and include a bracket top and a bracket bottom.

19 Claims, 32 Drawing Sheets



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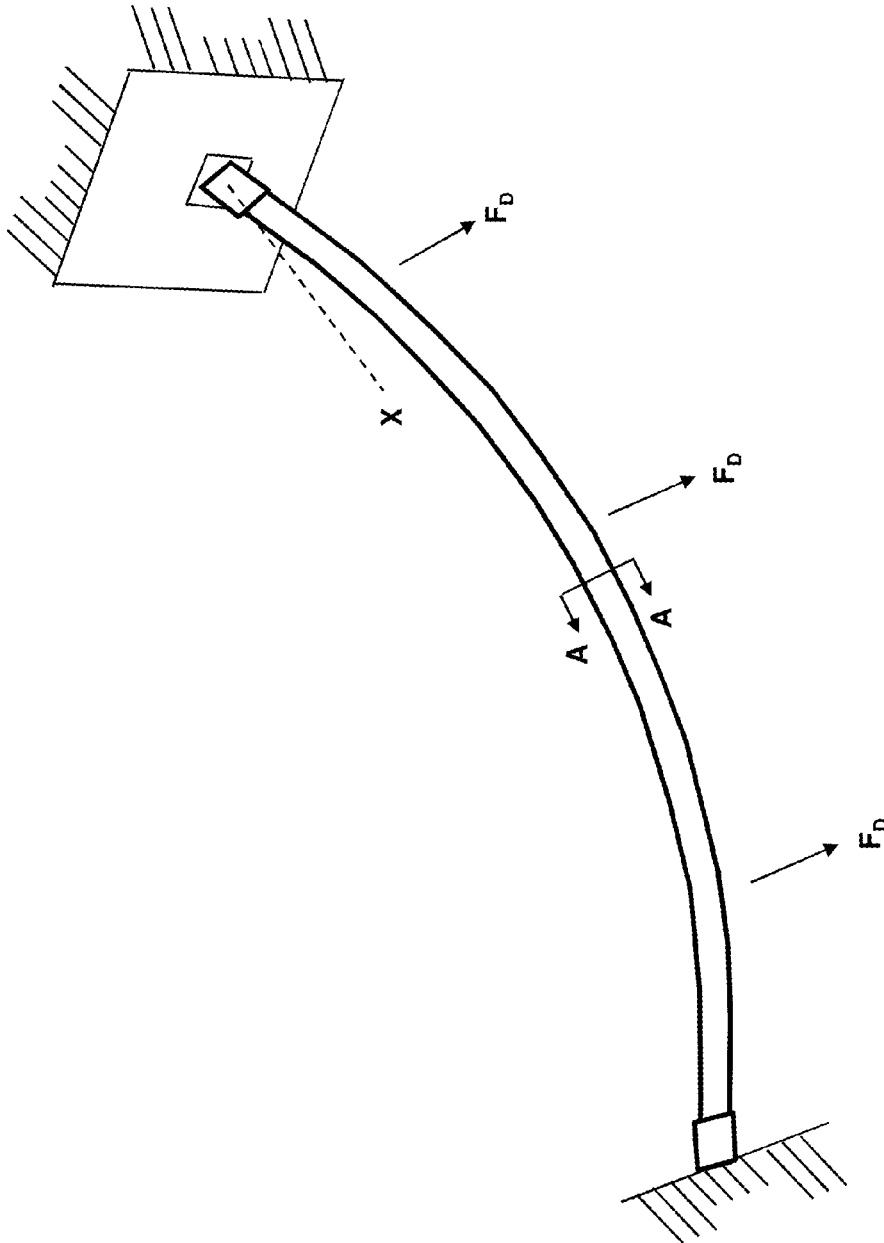
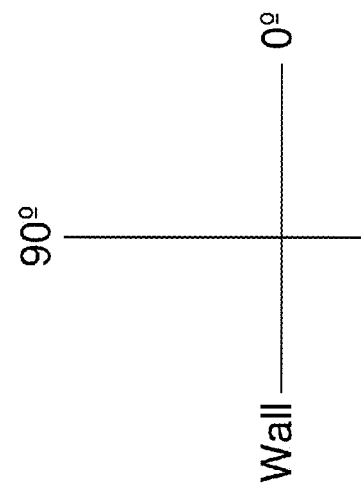
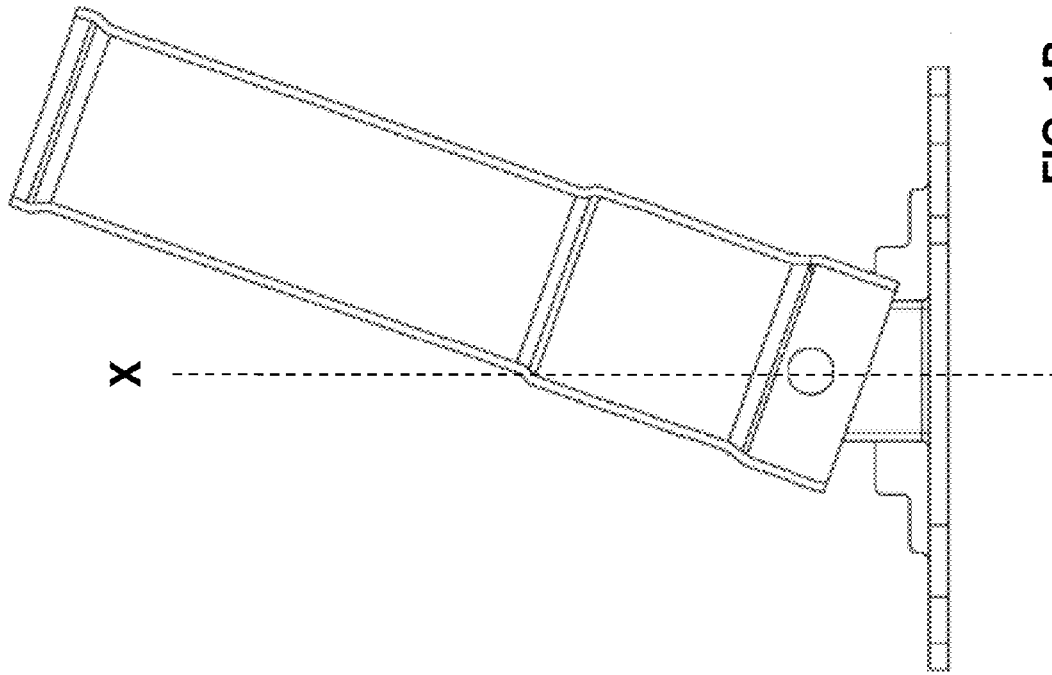


FIG. 1A

Prior Art



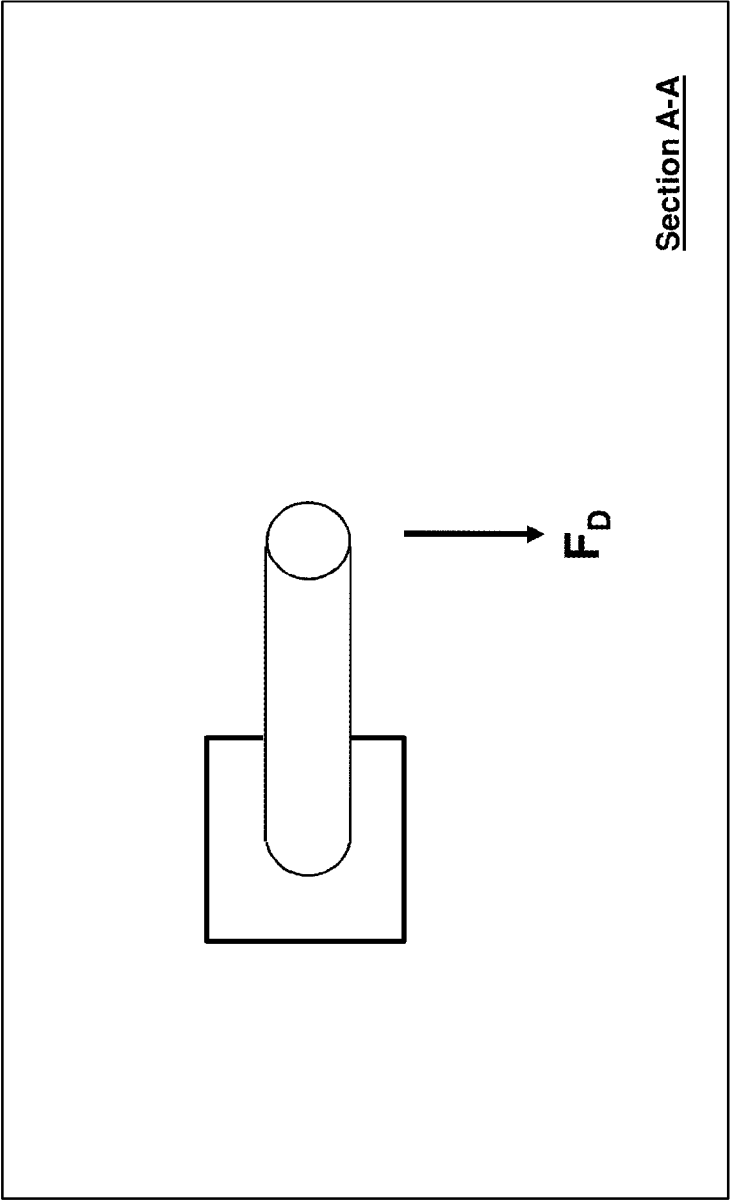


FIG. 1C

Prior Art

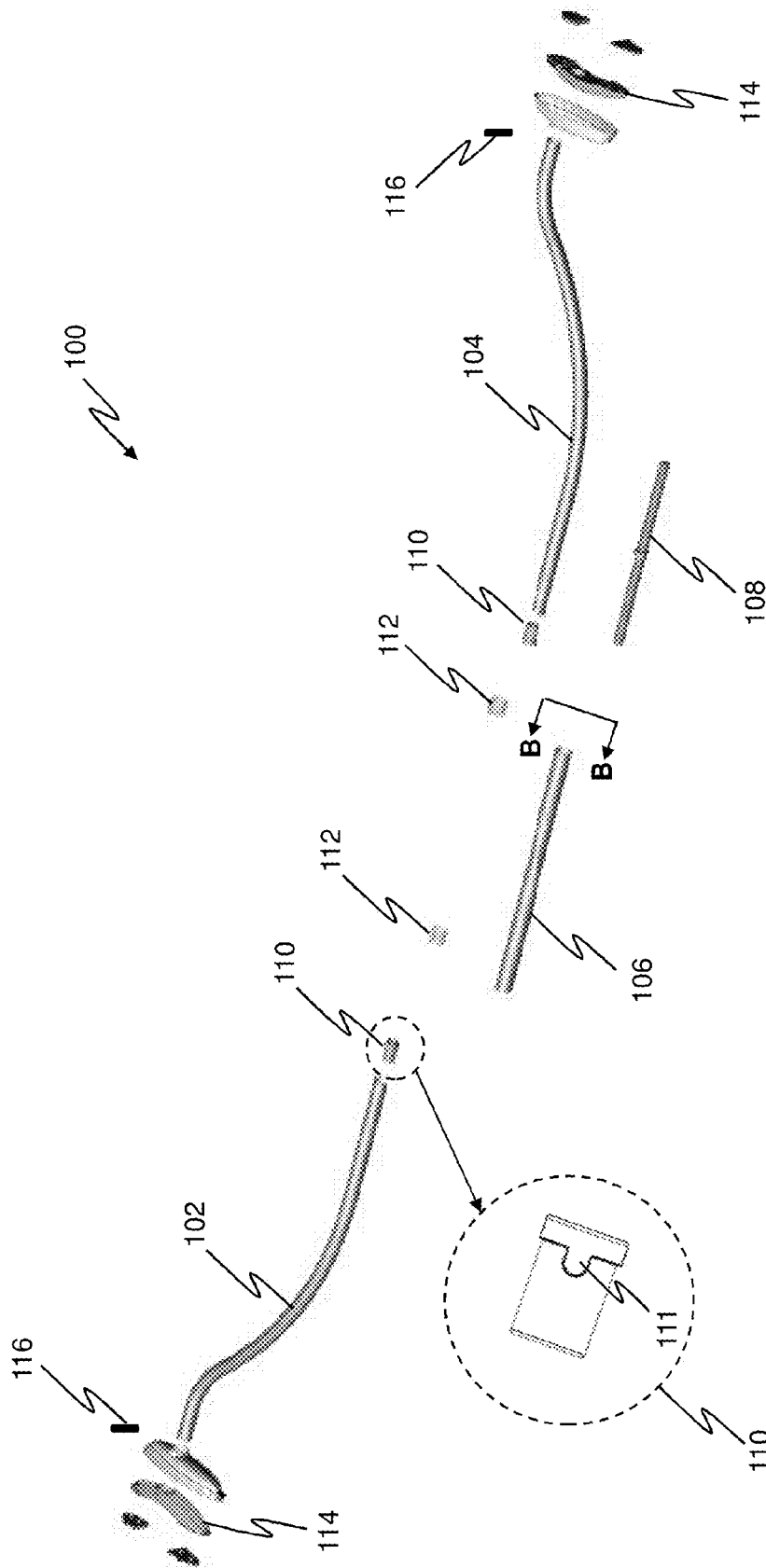
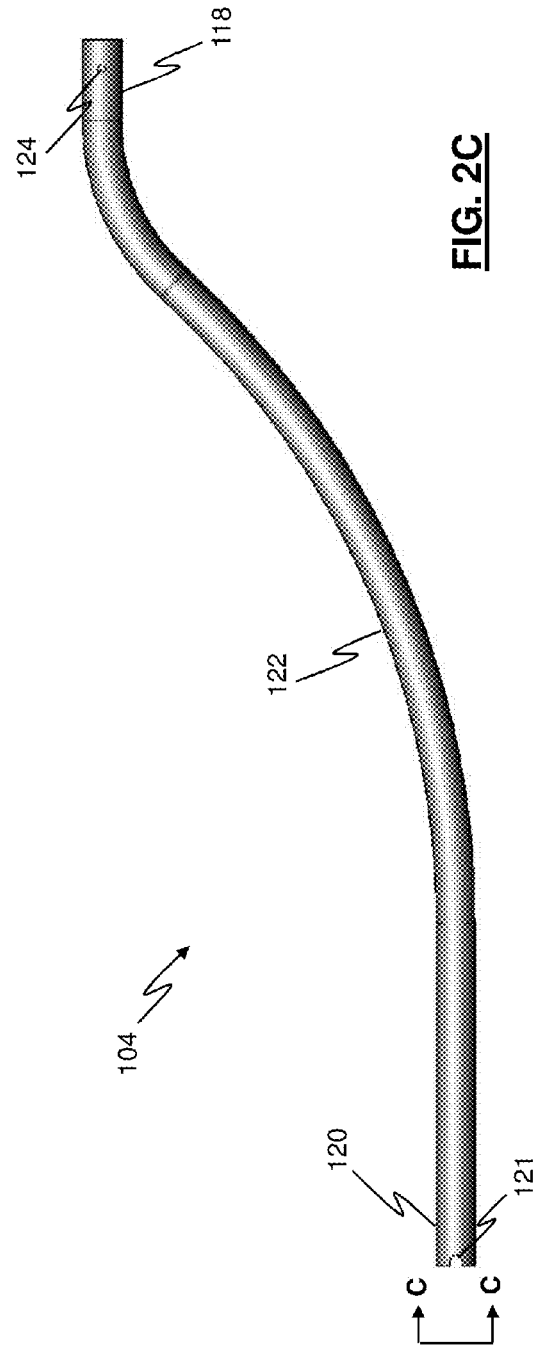
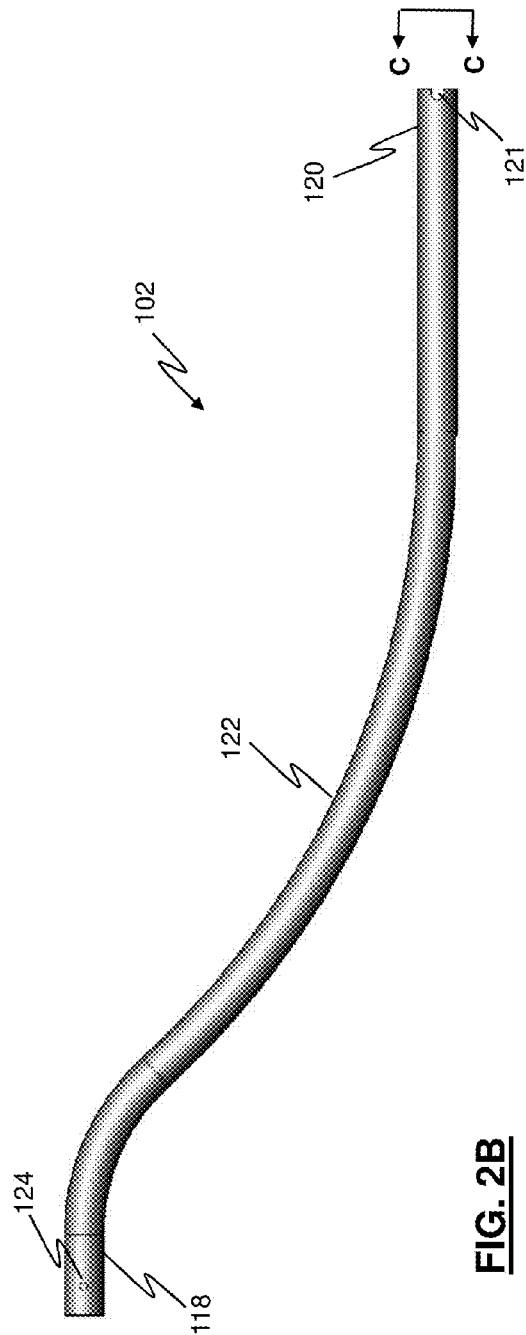
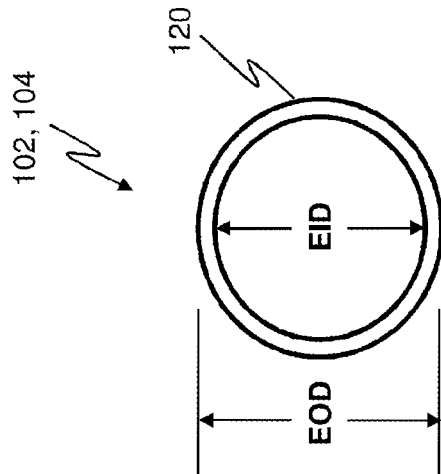


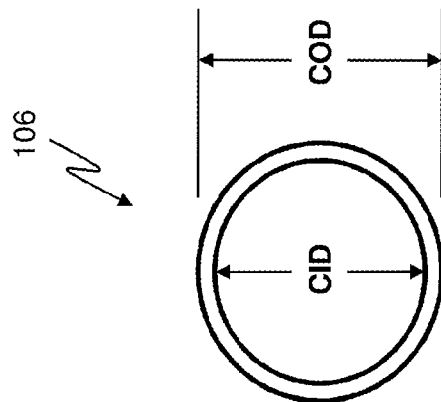
FIG. 2A





Section C-C

FIG. 2E



Section B-B

FIG. 2D

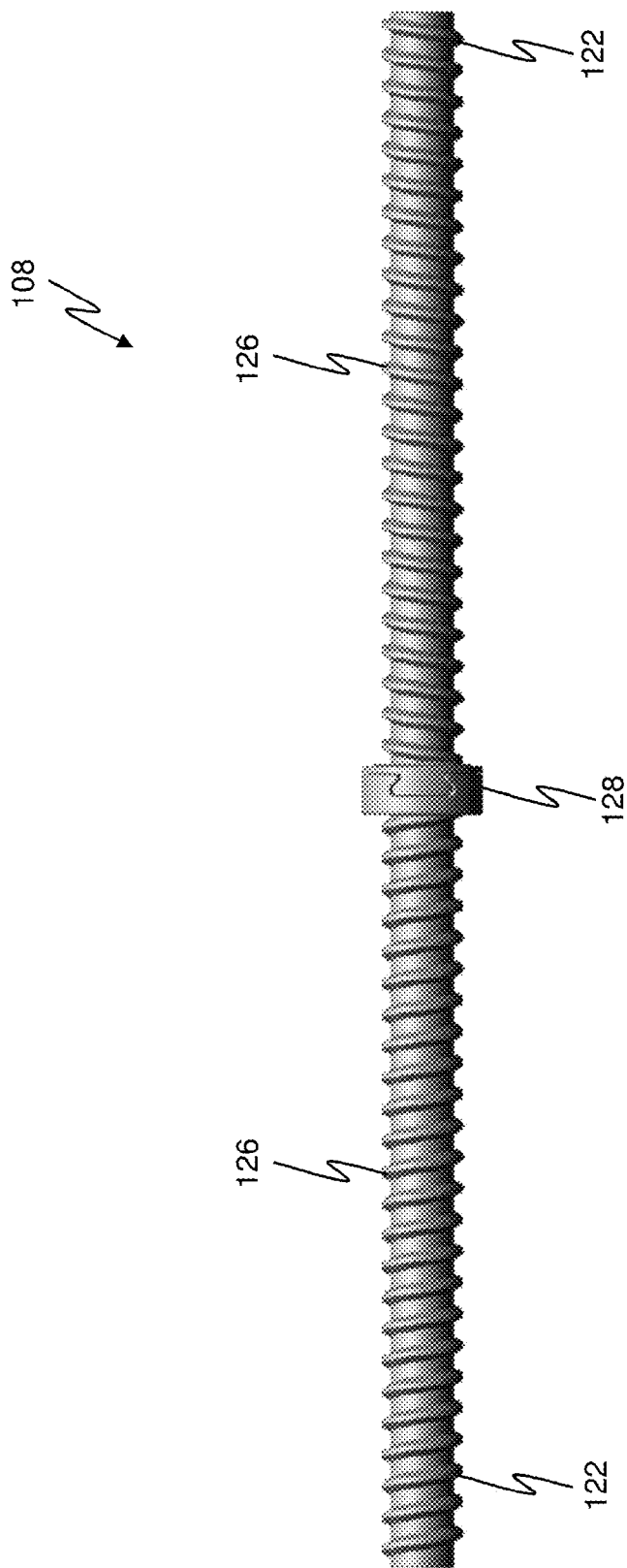


FIG. 3A

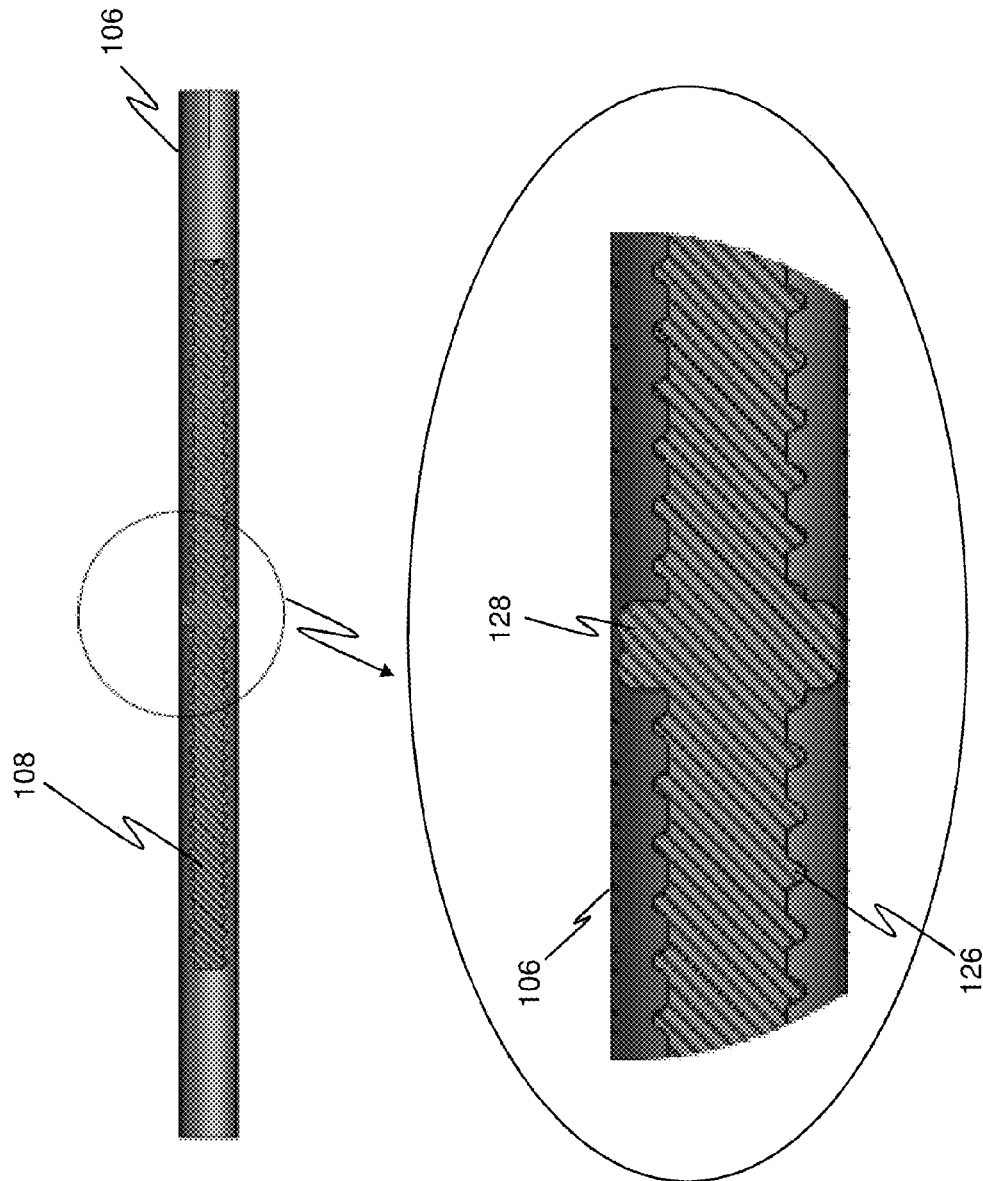


FIG. 3B

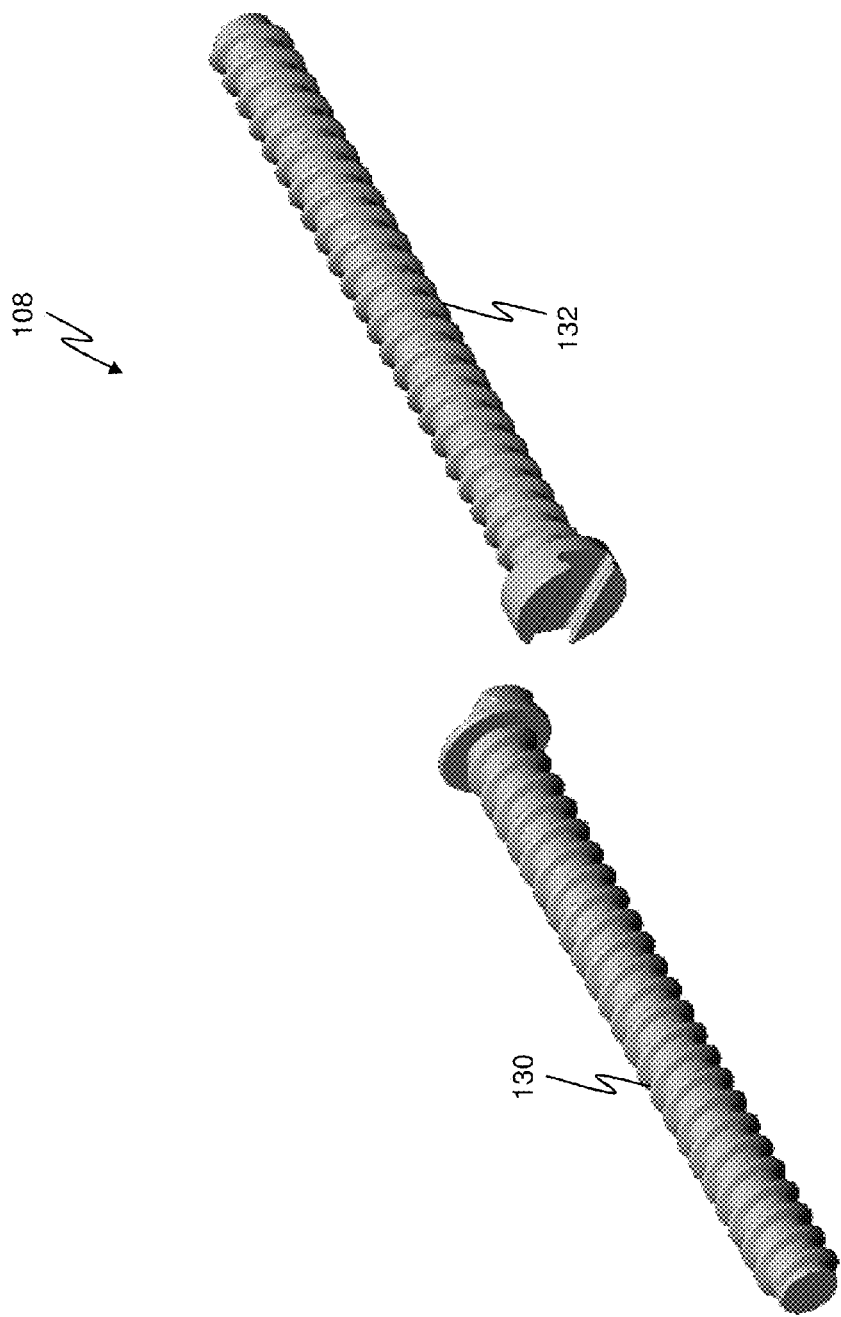


FIG. 3C

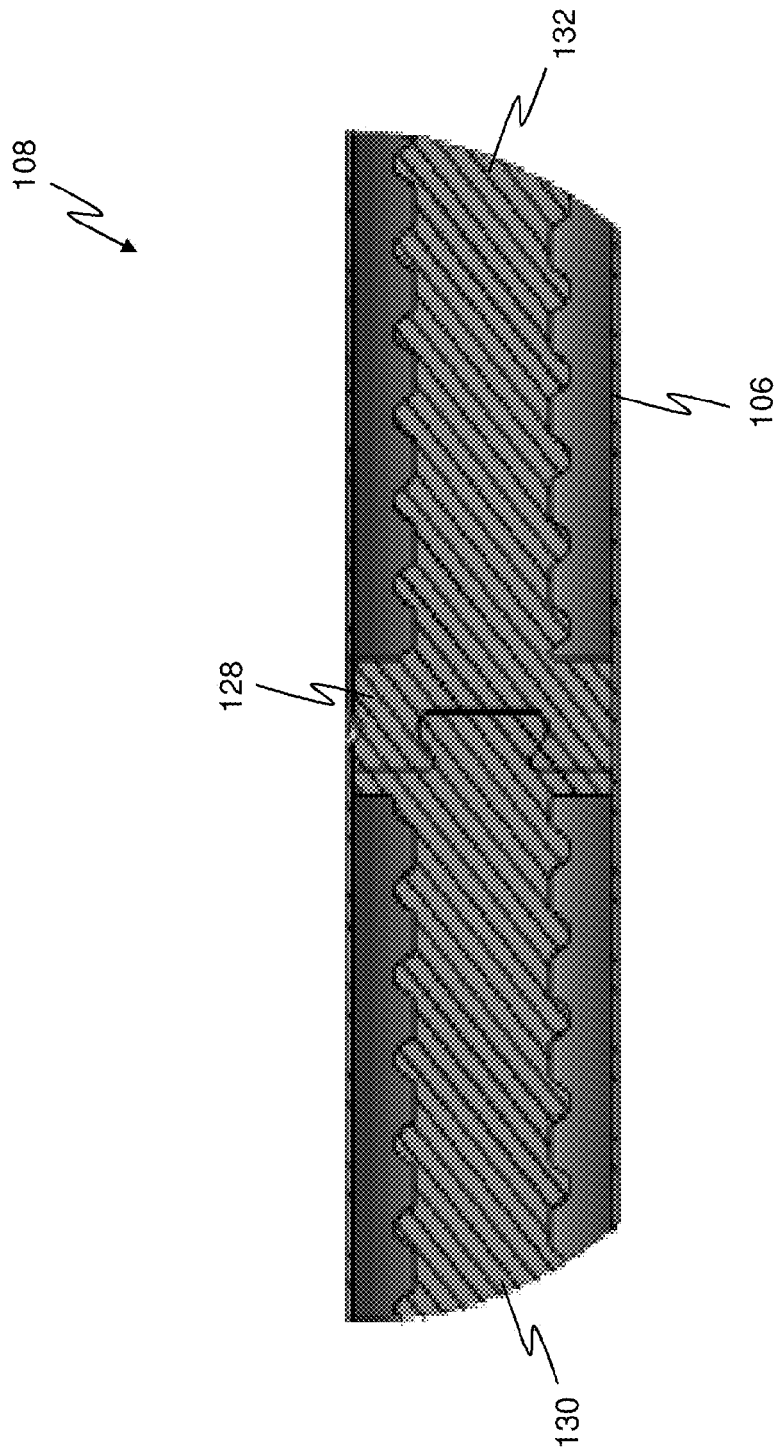


FIG. 3D

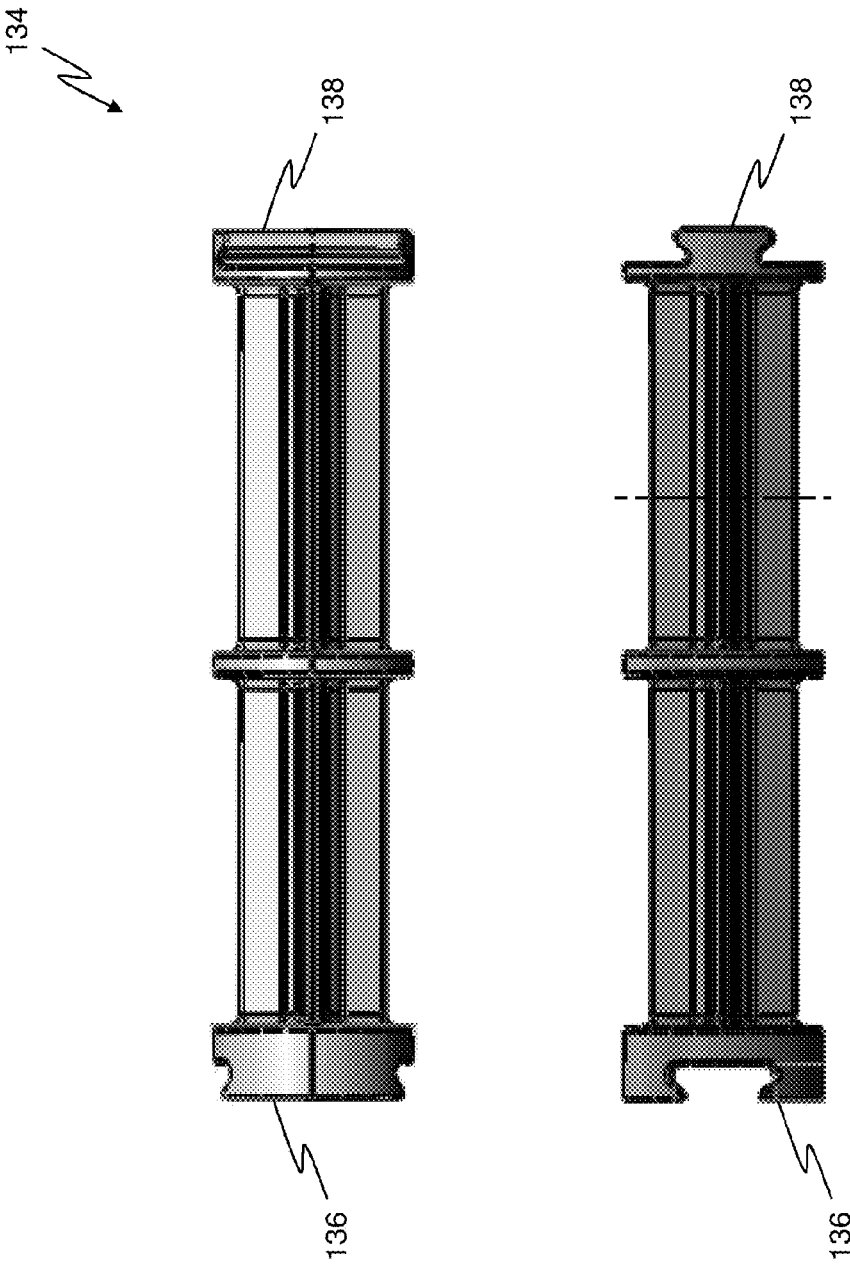


FIG. 3E

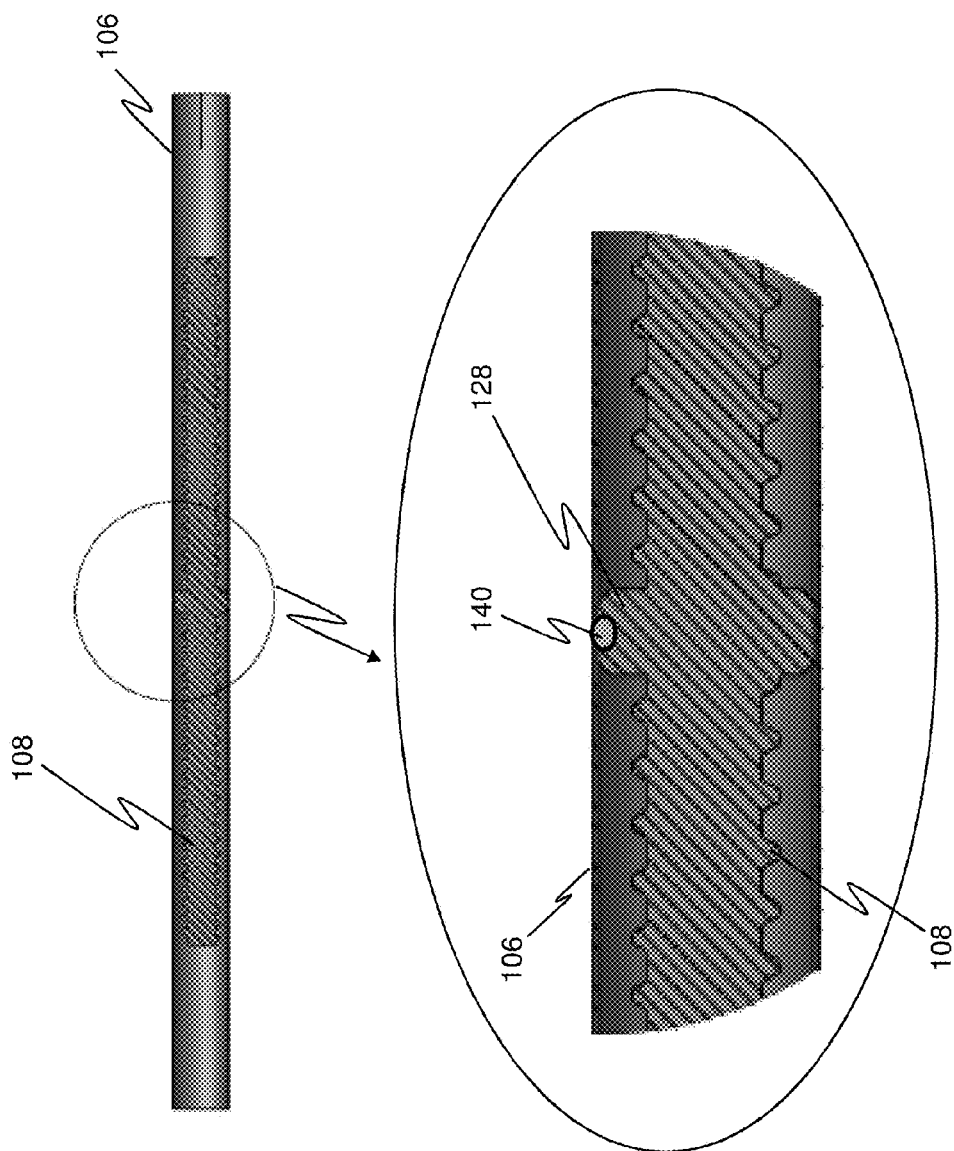


FIG. 3F

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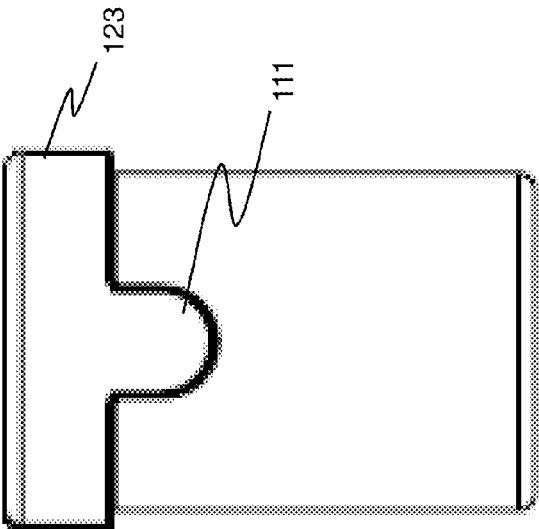
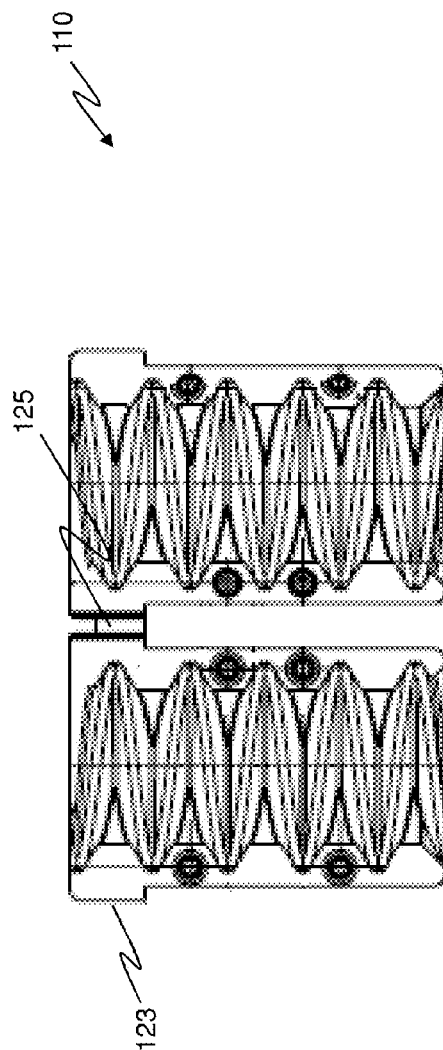
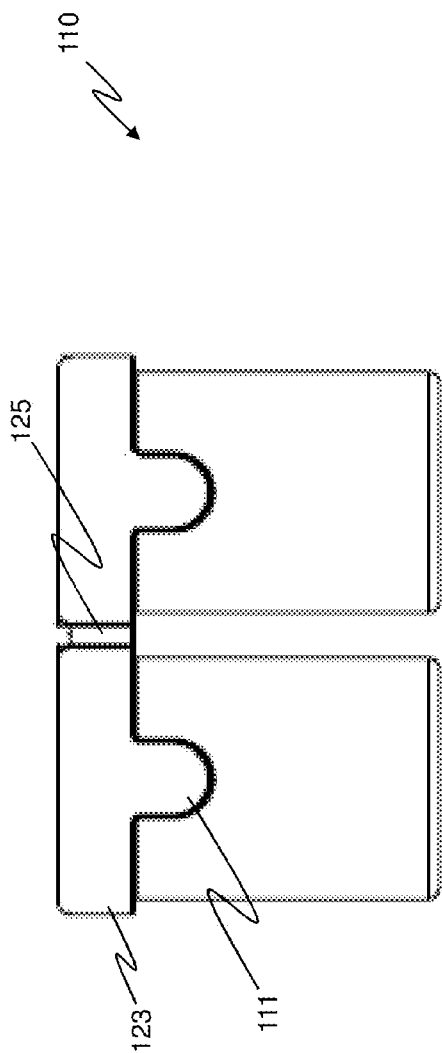


FIG. 4A



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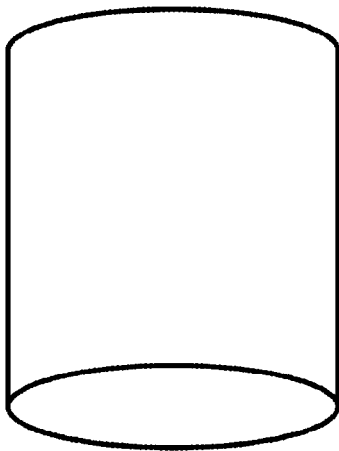


FIG. 5

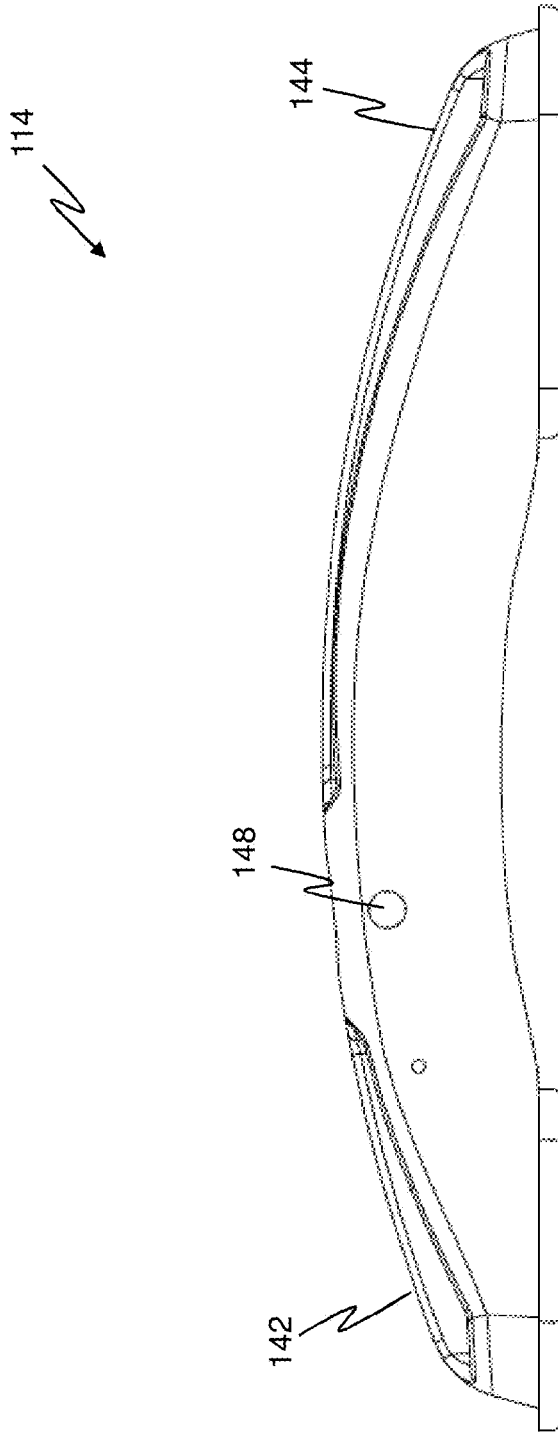


FIG. 6A

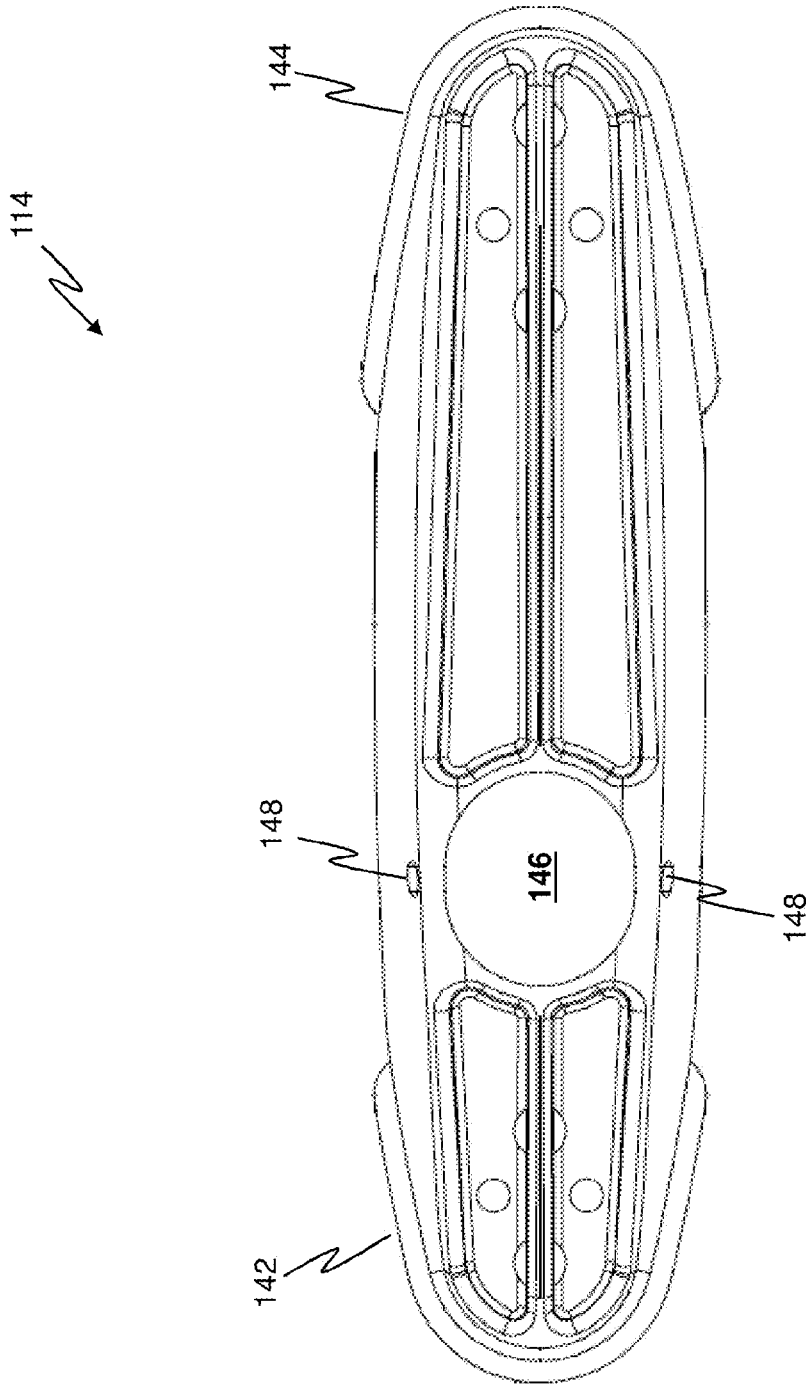


FIG. 6B

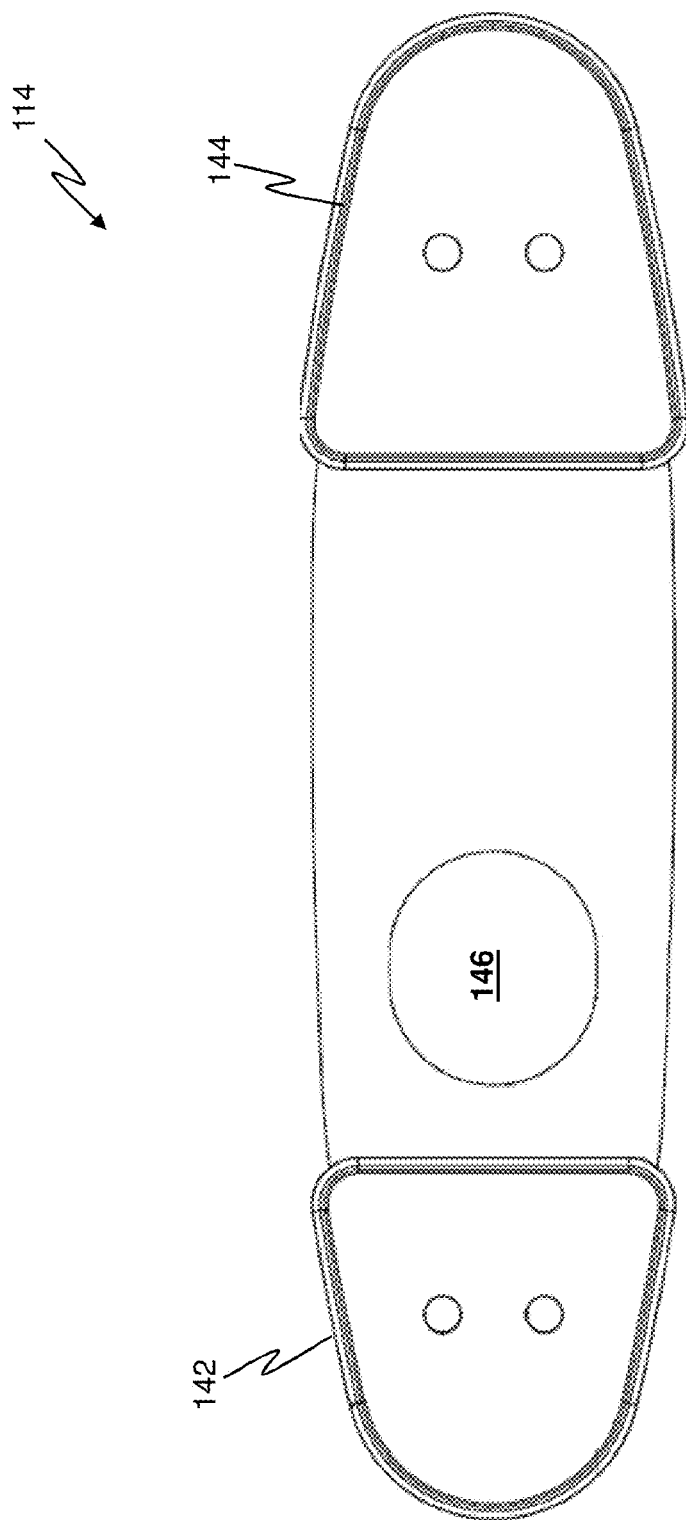


FIG. 6C

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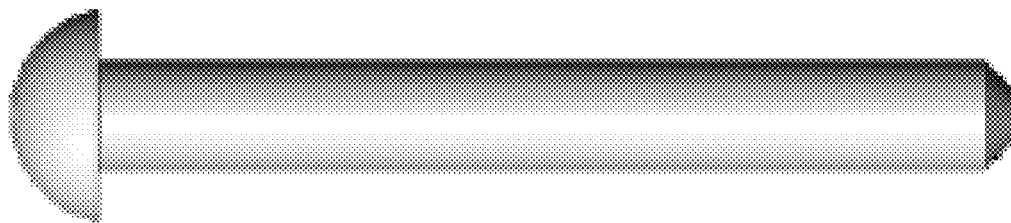


FIG. 6D

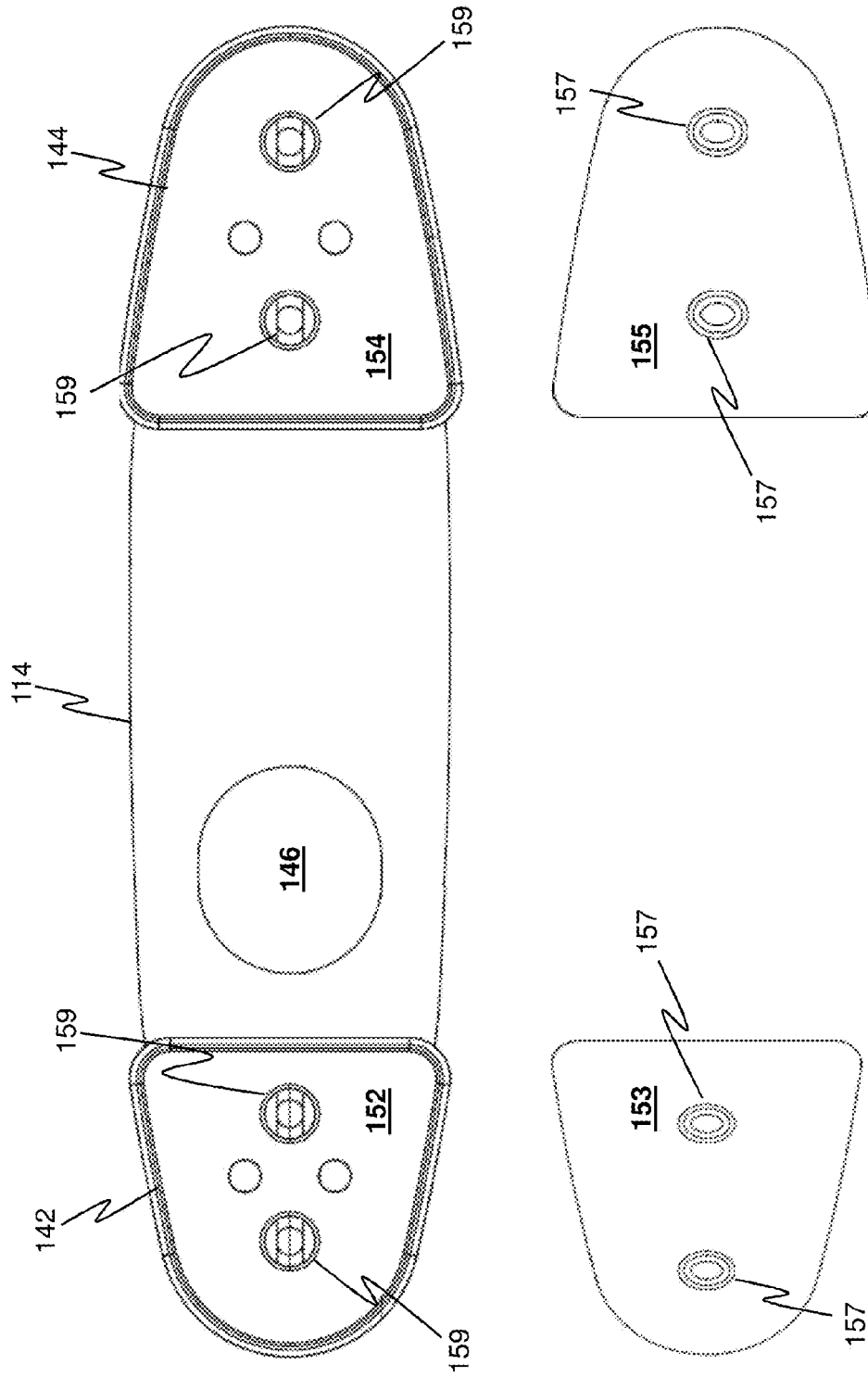


FIG. 6E

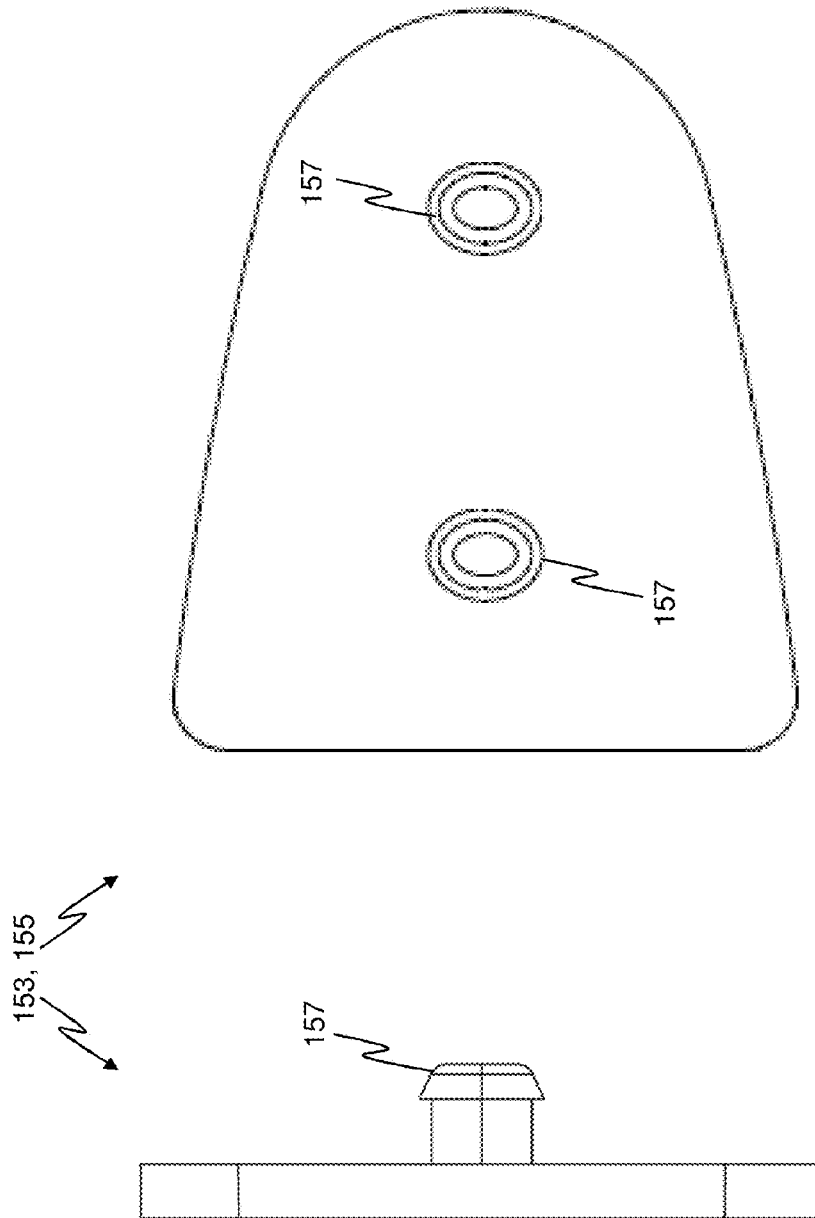


FIG. 6F

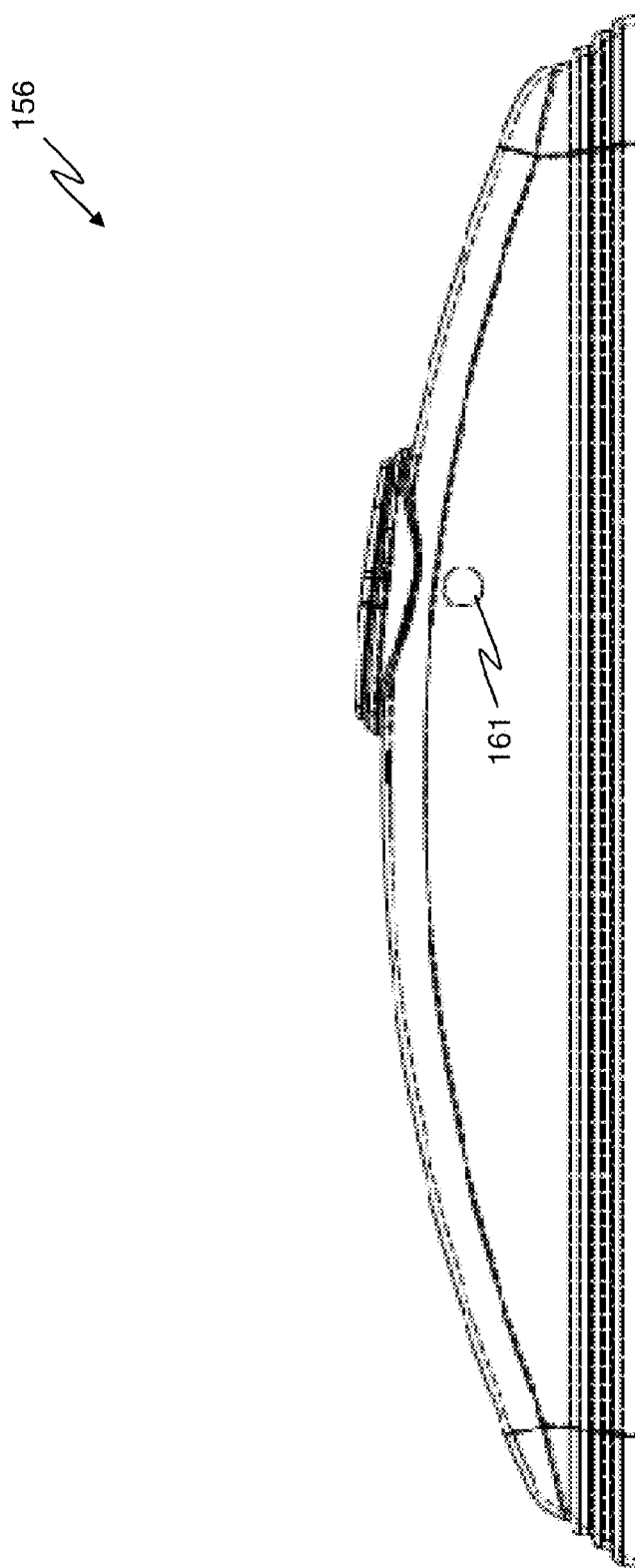


FIG. 7A

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FIG. 7B

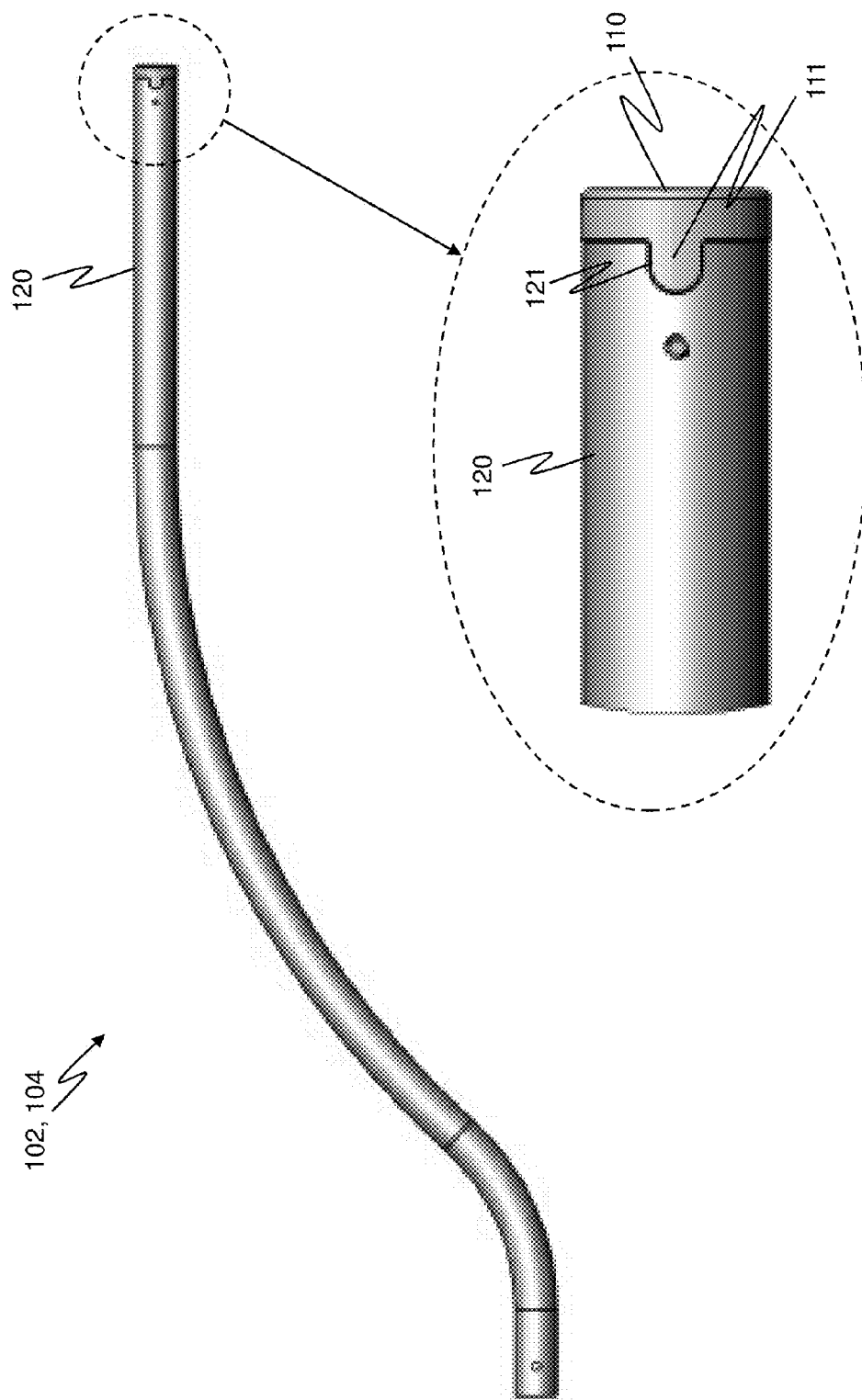


FIG. 8A

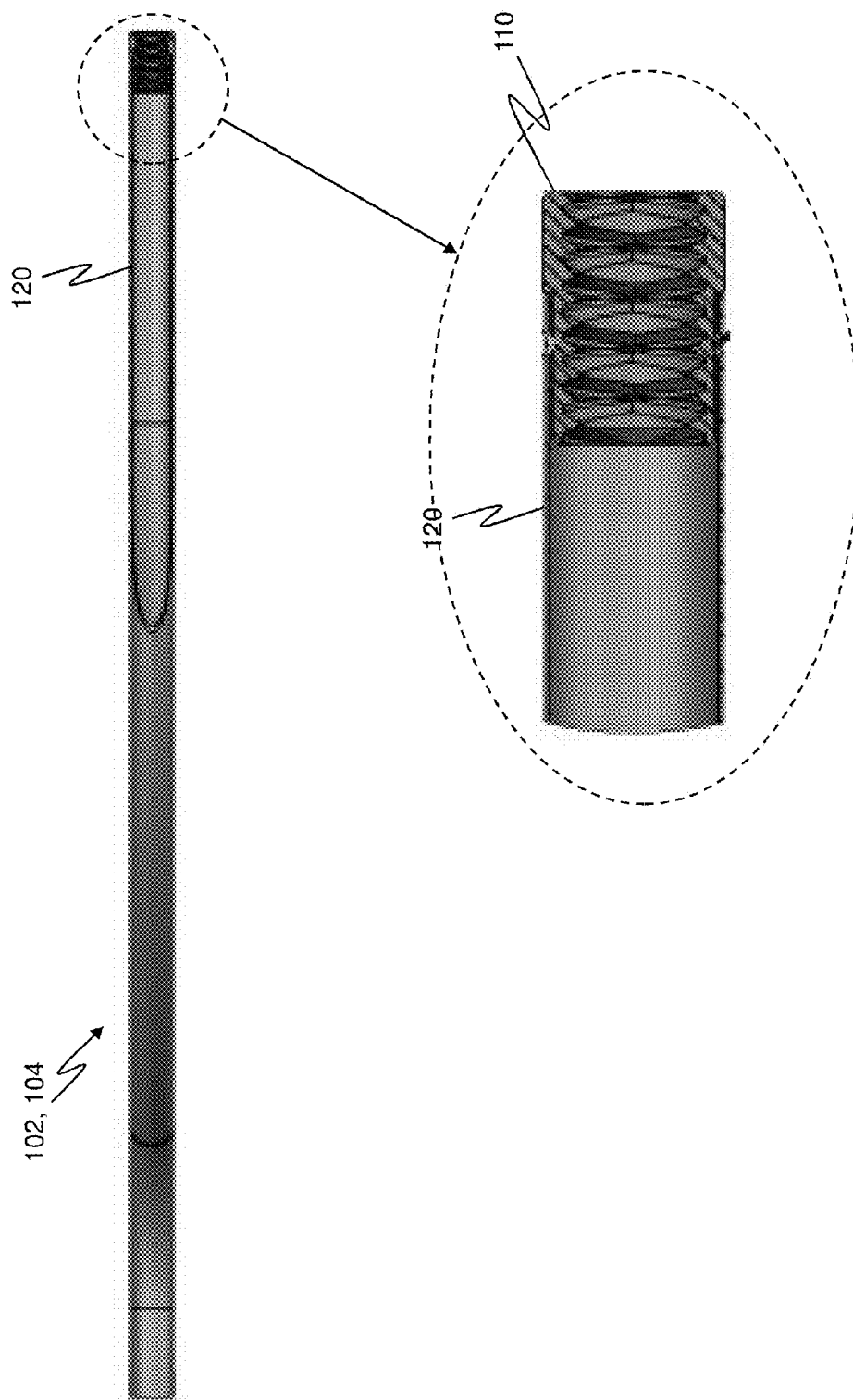


FIG. 8B

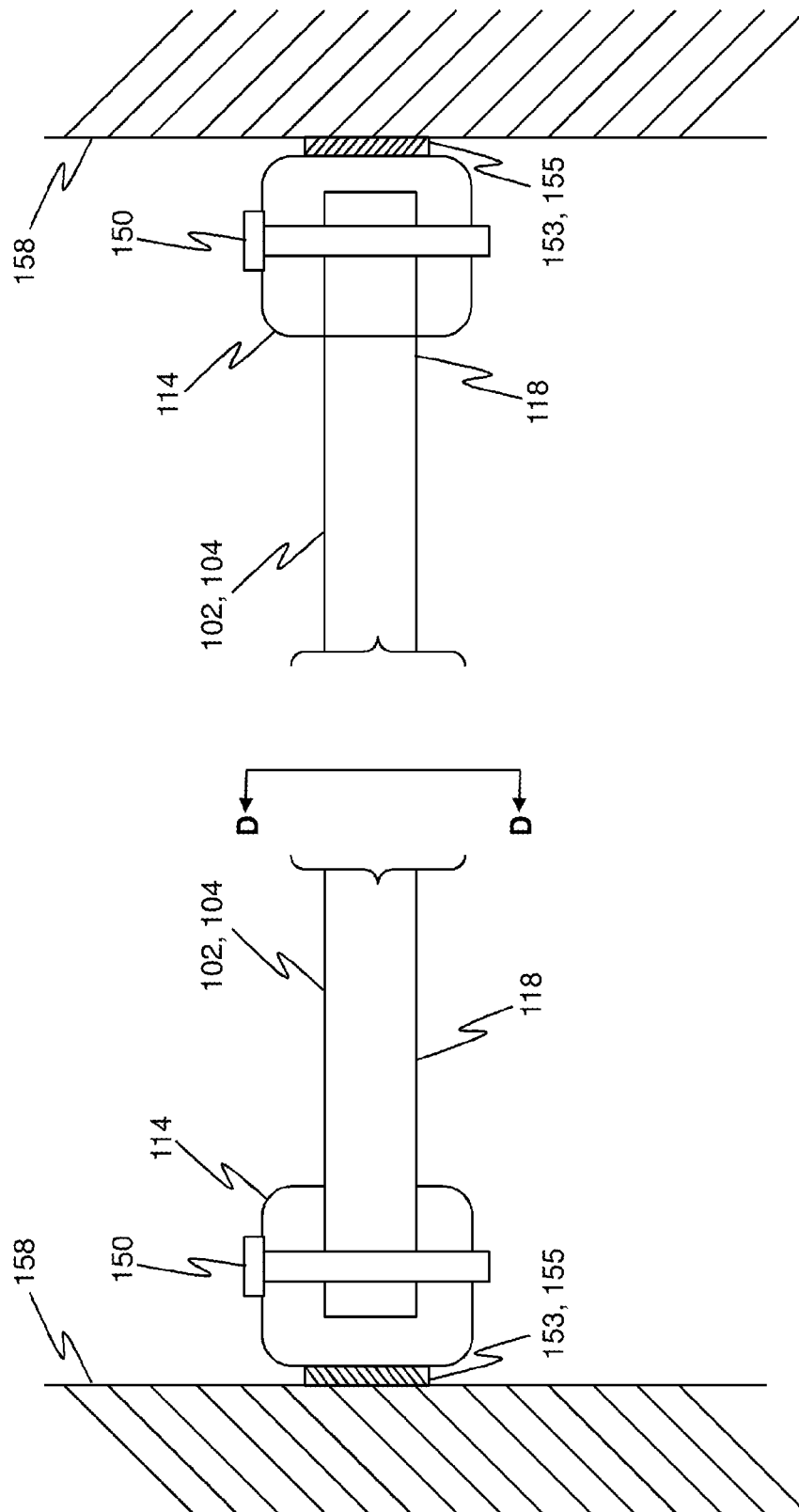
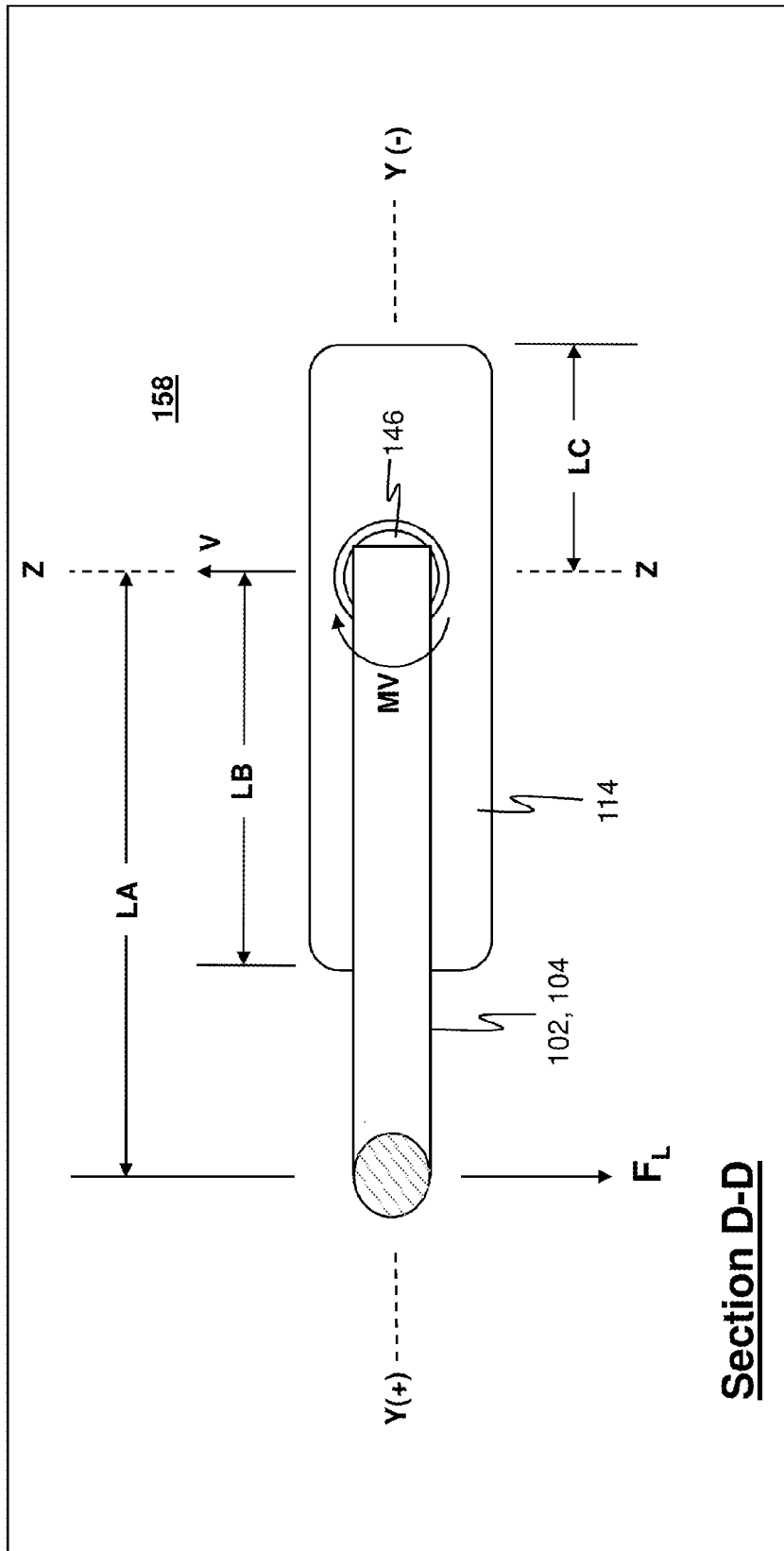


FIG. 9



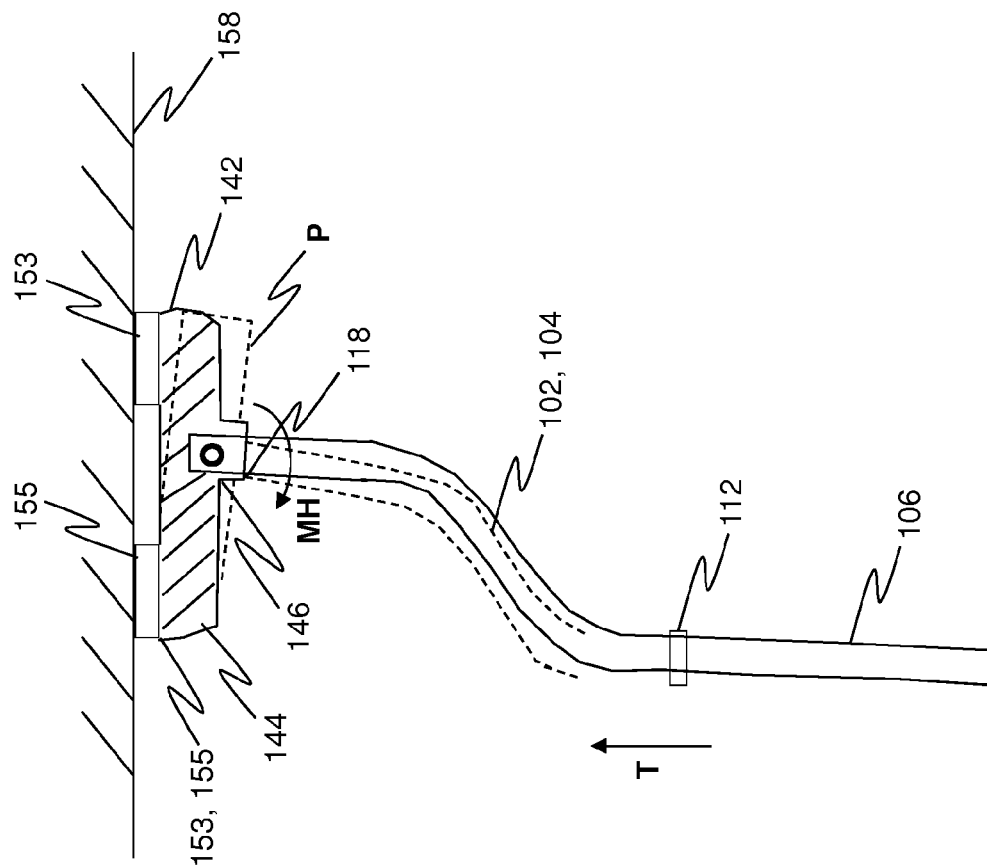


FIG. 11

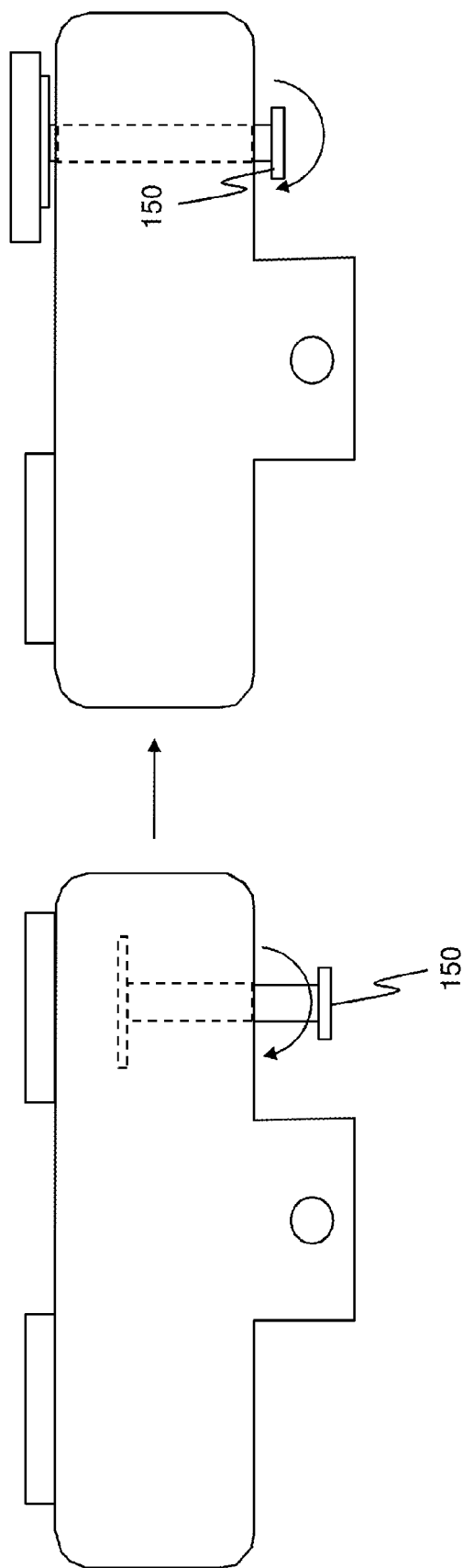


FIG. 12

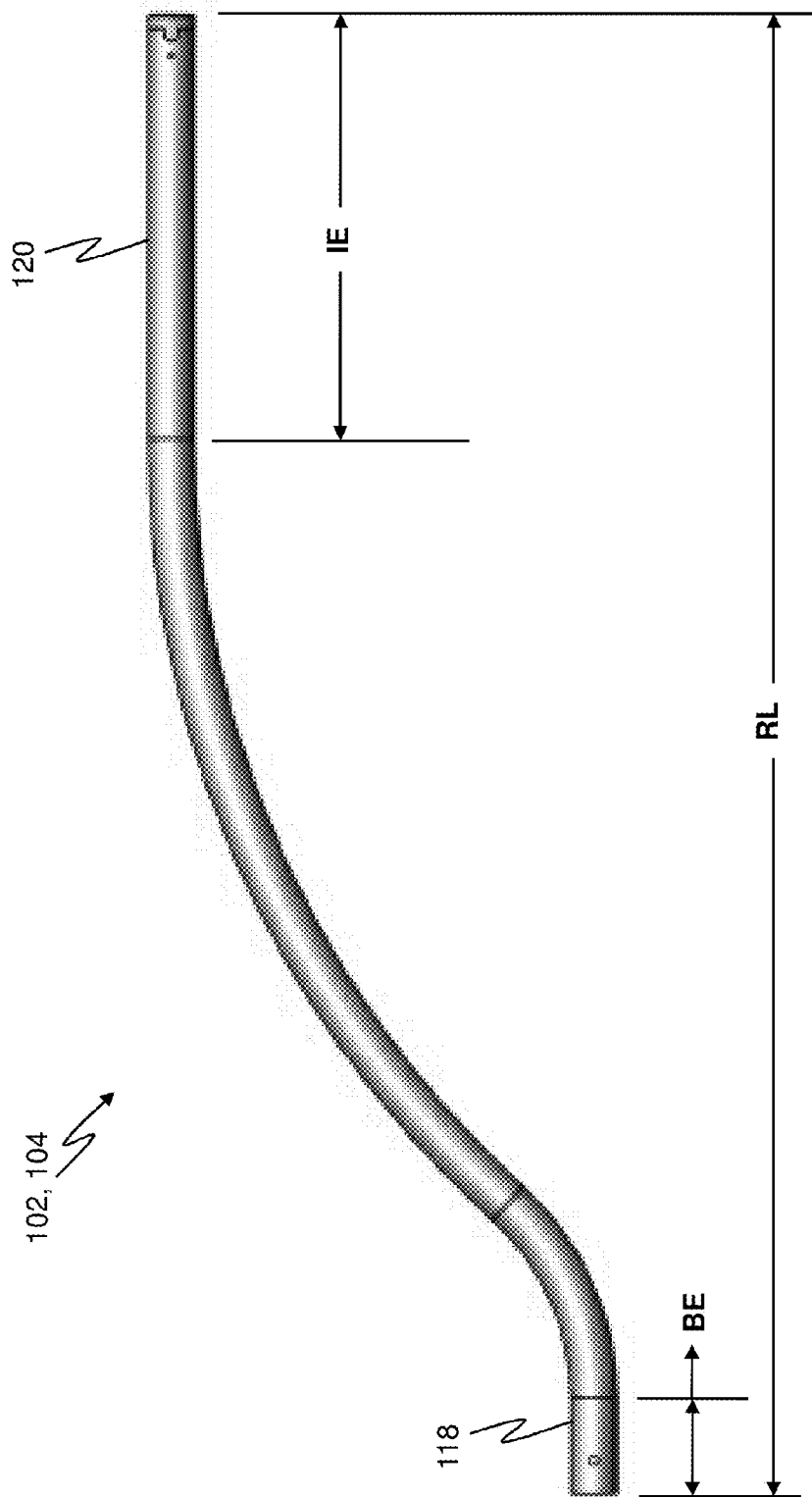


FIG. 13A

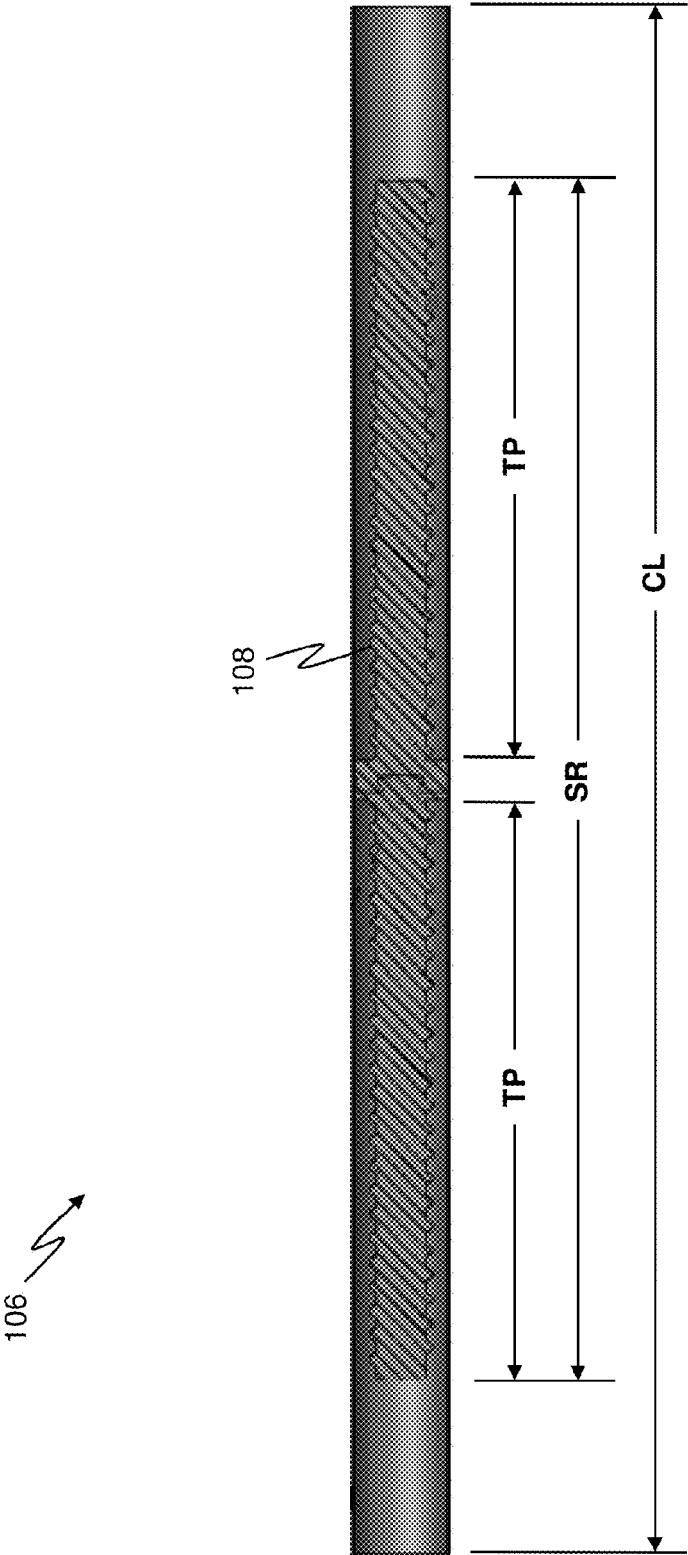


FIG. 13B

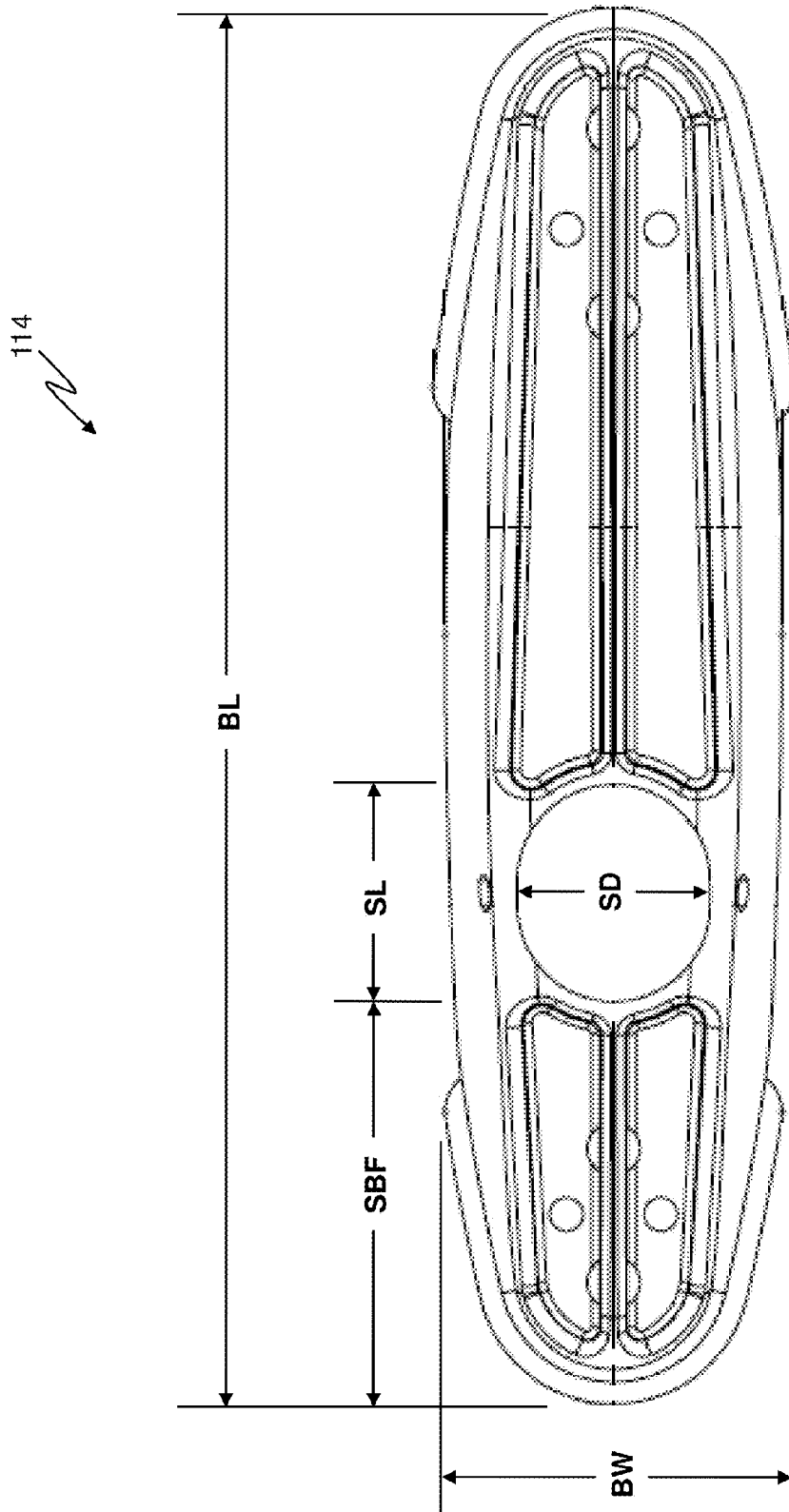


FIG. 13C

CURVED SHOWER ROD WITH OBLONG BRACKETS AND CENTER SCREW

RELATED APPLICATIONS

This application claims benefit of priority of the filing date of U.S. Provisional Patent Application Ser. No. 61/554,735 filed Nov. 2, 2011, the contents of which are incorporated by reference herein in its entirety.

FIELD OF THE INVENTION

This invention relates generally to shower rods and more particularly to a curved shower rod having a bracket which supports a torsional (rotational) load.

BACKGROUND OF THE INVENTION

Curved shower rods are well known in the art and are used to create more space within the shower enclosure than is generally available with a straight rod by angling the upper portion of the shower curtain away from the shower enclosure to give the user more upper body space. Referring to FIG. 1A, FIG. 1B and FIG. 1C, these curved rod systems are typically attached to the shower wall at an angle of less than 90° (between the rod and wall surface) and have an offset center section that is curved or bowed outward from the shower enclosure to provide the added upper body space while the bottom of the shower curtain remains within the bath tub.

Unfortunately, current designs have undesirable characteristics. This is because when a shower curtain is supported by the curved rod system, the combination of the weight of the shower curtain and the offset configuration creates a torsional downward force F_D on the rod system. This force is exacerbated when a user pulls on the curtain, for example, when opening and closing the curtain, subjecting the rod to additional torsional forces. As a result, the rod 'wants' to rotate in the direction of the torsional force F_D (downwardly toward the floor) about an axis X that is substantially perpendicular to the wall at the point where the curved rod system is connected to and supported by the wall. Accordingly, not only is there a torsional stress on the connection point between the curved rod system and the supporting wall, but there is a downward stress on the on the connection point between the curved rod system and the supporting wall caused by the weight of the curved rod system and shower curtain.

Furthermore, due to the configuration of the curved rod, the torsional and weight (downward) stresses are constantly present at the connection points between the curved rod system and the supporting wall. This is because no matter where on the curved shower rod the shower curtain is located, the weight of the shower curtain will generate a torsional load on the connectors. Accordingly, the connectors used to mount current curved shower bars must be strongly anchored to the shower wall to adequately counter these torsional and downward forces.

This characteristic requires that current curved shower rods be strongly affixed to the shower walls using screws or other physical mounting means. This is undesirable for several reasons. Firstly, tools and other hardware (such as screws) are required to install these rods. Secondly, if the rods are ever removed or replaced, multiple mounting holes are present in the walls and are unsightly unless they are repaired. And thirdly, because a large number of tub/shower combinations have tiled walls (or are constructed using plastic inserts), current curved shower rods systems cannot be used.

SUMMARY OF THE INVENTION

A curved shower rod assembly is provided and includes a first end rod and a second end rod, wherein each of the first end rod and second end rod include a rod bracket end and a rod interface end, the rod bracket end and rod interface end being separated by a rod curved portion and wherein the rod interface end is hollow. A center rod is also included, wherein the center rod is hollow and includes a center rod inner diameter sized to movably contain the rod interface ends. Additionally, a screw rod having a first end with right-hand threads and a second end with left-hand threads is also provided, wherein the screw rod is securely contained within the center rod. A first threaded sleeve and a second threaded sleeve are included, wherein the first and second threaded sleeves include bi-directional internal threads, wherein the first threaded sleeve is located within the rod interface end of the first end rod and the second threaded sleeve is located within the rod interface end of the second end rod, and wherein the rod interface end of the first end rod is located within the center rod such that the first threaded sleeve is proximate the first end of the screw rod, and the rod interface end of the second end rod is located within the center rod such that the second threaded sleeve is proximate the second end of the screw rod. Furthermore, a first mounting bracket and a second mounting bracket are included, wherein each of the first and second mounting brackets are oblong in shape and include a bracket top and a bracket bottom. The bracket top defines a socket cavity configured to contain the rod bracket end of the first and second end rod, and the bracket bottom includes a plurality of footpads.

A curved shower rod is provided and includes a first end rod and a second end rod, wherein each of the first end rod and second end rod include a rod bracket end and a rod interface end, the rod bracket end and rod interface end being separated by a rod curved portion and wherein the rod interface end is hollow. Additionally, a center rod is included, wherein the center rod is hollow and includes a center rod inner diameter sized to movably contain the rod interface ends. Furthermore, a screw rod having a first end with right-hand threads and a second end with left-hand threads is included, wherein the screw rod is securely contained within the center rod. Moreover, a first threaded sleeve and a second threaded sleeve are included, wherein the first and second threaded sleeves include bi-directional internal threads, wherein the first threaded sleeve is located within the rod interface end of the first end rod and the second threaded sleeve is located within the rod interface end of the second end rod, and wherein the rod interface end of the first end rod is located within the center rod such that the first threaded sleeve and the first end of the screw rod are threadingly associated and the rod interface end of the second end rod is located within the center rod such that the second threaded sleeve and the second end of the screw rod are threadingly associated.

A mounting bracket for mounting a curved shower rod within a shower enclosure between a pair of shower walls is provided, wherein the curved shower rod mounting bracket includes a first mounting bracket, and a second mounting bracket. The first mounting bracket and second mounting bracket are oblong in shape and includes a bracket front, a bracket rear, a bracket top and a bracket bottom, the bracket top defining a socket cavity and the bracket bottom including a first footpad and a second footpad, wherein the socket cavity is located proximate the bracket front and configured to contain the rod bracket end of the first and second end rod, and

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wherein the first footpad is located proximate the bracket front and the second footpad is located proximate the bracket rear.

BRIEF DESCRIPTION OF THE DRAWINGS

The foregoing and other features and advantages of the present invention should be more fully understood from the accompanying detailed description of illustrative embodiments taken in conjunction with the following Figures in which like elements are numbered alike in the several Figures:

FIG. 1A is a top down perspective view of a curved shower rod connected to shower walls, in accordance with prior art.

FIG. 1B is a top down view showing the connection of the curved shower rod of FIG. 1A to the shower wall, in accordance with the prior art.

FIG. 1C is a side sectional view of the curved shower rod of FIG. 1A, in accordance with the prior art.

FIG. 2A is top down perspective view of a curved shower rod assembly, in accordance with the present invention.

FIG. 2B is side view of a first tubular curved end piece of the curved shower rod assembly of FIG. 2A.

FIG. 2C is side view of a second tubular curved end piece of the curved shower rod assembly of FIG. 2A.

FIG. 2D is sectional view of a center tubular piece of the curved shower rod assembly of FIG. 2A.

FIG. 2E is sectional view of the first and second curved end pieces of FIG. 2B and FIG. 2C.

FIG. 3A is side view of one embodiment of a screw rod of the curved shower rod assembly of FIG. 2A, in accordance with one embodiment.

FIG. 3B is side sectional view of the screw rod of FIG. 3A located in the center piece of FIG. 1C.

FIG. 3C is side view of a screw rod of the curved shower rod assembly of FIG. 2A, in accordance with another embodiment.

FIG. 3D is side sectional view of the screw rod of FIG. 3C located in the center piece of FIG. 1C.

FIG. 3E is side sectional view of an adapter for the screw rod of FIG. 3C.

FIG. 3F is top view of another embodiment of the screw rod/center piece combination of FIG. 3A.

FIG. 4A is side view of the threaded sleeve of the curved shower rod of FIG. 1A.

FIG. 4B is side view of the outside of the threaded sleeve of FIG. 4A.

FIG. 4C is side view of the inside of the threaded sleeve of FIG. 4A showing the threaded portion.

FIG. 5 is side view of a ferrule used with the curved shower rod assembly of FIG. 1A.

FIG. 6A is a side view of a mounting bracket for the curved shower rod assembly of FIG. 2A, in accordance with one embodiment.

FIG. 6B is a top down view of the mounting bracket of FIG. 6A.

FIG. 6C is a bottom up view of the mounting bracket of FIG. 6A.

FIG. 6D is a mounting pin for the curved shower rod assembly of FIG. 2A.

FIG. 6E is a bottom up view of a mounting bracket for the curved shower rod assembly of FIG. 2A showing footpads, in accordance with another embodiment.

FIG. 6F is a top down and side view of the footpad of FIG. 6E.

FIG. 7A is a side view of a mounting bracket cover for the curved shower rod assembly of FIG. 2A.

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FIG. 7B is a top down and side isometric view of the mounting bracket cover of FIG. 7A.

FIG. 8A is a side view of the bracket end of the curved end piece with the threaded sleeve of the curved shower rod assembly of FIG. 2A.

FIG. 8B is a top down sectional view of the bracket end of the curved end piece with the threaded sleeve of FIG. 8A.

FIG. 9 is a side view of the curved shower rod system of FIG. 2A associated with shower walls, in accordance with the present invention.

FIG. 10 is a sectional view of FIG. 9.

FIG. 11 is a top down view of FIG. 9.

FIG. 12 is top down view of a mounting bracket, in accordance with another embodiment of the invention.

FIG. 13A is a side view of the first and second curved end piece, in accordance with one embodiment of the invention.

FIG. 13B is a side sectional view of the center piece with the screw rod, in accordance with one embodiment of the invention.

FIG. 13C is a top down view of the mounting bracket, in accordance with one embodiment of the invention.

DETAILED DESCRIPTION

In accordance with the present invention, a curved shower rod which with brackets is provided where the rod includes new and novel features that allow for easy and ready installation and operation without the need to put holes in the supporting shower walls and without the use of tools or other hardware, such as screws and screw drivers. Additionally, the curved shower rod of the present invention includes new and novel features that provide the rod with the capability of supporting a load of approximately one pound per lineal foot of shower rod (or more) without twisting in space due to torsional forces exerted by the weight of the rod, the shower curtain and/or the opening/closing of the shower curtain during use. These new and novel features are described herein after with reference to the best mode and several other embodiments.

It should be appreciated that the curved shower rod of the present invention may be configured in multiple adjustable lengths, such as 5 foot or 6 foot. As described further herein, one way the advantages of the present invention may be achieved is by having multiple rod ends that are movably adjustable relative to a center rod piece to cause the ends to compress the rod brackets against the supporting shower wall, where each side of the curved shower rod may include only one bracket for a more aesthetically pleasing appearance. Another advantage of the curved shower rod of the present invention is that because there are more than two rod pieces, the disassembled curved shower rod can be packaged and stored in a smaller package than current curved shower rods.

In accordance with one embodiment of the invention and referring to FIG. 2A, FIG. 2B and FIG. 2C, an easily adjustable curved shower rod assembly 100 is provided and includes a first tubular curved end piece 102, a second tubular curved end piece 104, a substantially straight center tubular piece 106, a screw rod 108, two threaded sleeves 110 having a sleeve notch 111, two ferrules 112, two wall mounts or mounting brackets 114 and two bracket pins 116. Each of the first curved end piece 102 and second curved end piece 104 include a bracket end 118 and a center or interface end 120, where the bracket end 118 and interface end 120 are substantially straight and separated by a curved portion 122. The bracket end 118 includes a pair of rod mounting holes 124 for connecting to the mounting brackets 114 and the interface

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ends **120** include a interface end notch **121** for interacting with the sleeve notch **111** of the threaded sleeves **110**, as discussed further hereinafter.

Referring to FIG. 2D, each of the first curved end piece **102** and second curved end piece **104** include an end piece outer diameter EOD and an end piece inner diameter EID (See Section C-C). Additionally, the center tubular piece **106** includes a center piece inner diameter CID and a center piece outer diameter COD (See Section B-B), where the center piece inner diameter CID is larger than the end piece outer diameter EOD. For example, in one embodiment the end piece outer diameter EOD is about $\frac{7}{8}$ inches and the center piece inner diameter CID is about 1 inch. This configuration advantageously allows the interface end **120** of the first and second curved end pieces **102**, **104** to slide into and out of the center piece **106** such that the length of the shower rod **100** is adjustable. It is contemplated that in other embodiments, the above configuration may be arranged such that the center piece **106** slides into and out of the interface end **120** of the first and second curved end pieces **102**, **104**.

Referring to FIG. 3A and FIG. 3B, the screw rod **108** includes opposing-end left and right threads **126** and a raised center portion **128** that is sized to frictionally engage with the inner surface of the center piece **106**. The screw rod **108** may be slidably press fit into the center piece **106** to be securely contained therein and as such, when the screw rod **108** is located within the center piece **106**, the screw rod **108** is frictionally and securely contained therein. Referring to FIG. 3C and FIG. 3D, one embodiment of the screw rod **108** is shown and includes a first rod end **130** and a second rod end **132**, where one end of the first and second rod ends **130**, **132** are keyed to fit together when joined, where when joined together the first rod end **130** and second rod end **132** form the raised center portion **128**. Referring to FIG. 3E, this configuration allows for the use of an adapter **134** which may be used to expand the length of the screw rod **108**. As shown, the adapter **134** includes a first adapter end **136** and a second adapter end **138**, where the first adapter end **136** is keyed to fit the end of the first rod end **130** and the second adapter end **138** is keyed to fit the end of the second rod end **132**. It should be appreciated that when the adapter **134** is used, the screw rod **108** has two (2) raised center portions **128** sized to frictionally engage with the inner surface of the center piece **106**.

Referring to FIG. 3F, it is contemplated that in another embodiment, a secondary detent **140** in the center piece **106** may be included where the secondary detent interacts with the raised center portion **128** to retain (or help retain) the screw rod **108** within the center piece **106**. In still yet another embodiment, a retaining strip may be attached to the top of the raised center portion **128** of the screw rod **108**, where the retainer strip is configured to engage the inner surface of the center piece **106** to prevent/limit rotation of the screw rod **108** within the center piece **106**. For example, one (or both) ends of the retaining strip may be slightly protruding from the raised center portion **128** such that if the screw rod **108** rotates relative to the center piece **106** the ends of the retaining strip digs into the inner surface of the center piece **106** and limits/prevents rotation of the screw rod **108** relative to the center piece **106**.

In still yet another embodiment, the retaining strip may include one or more barbs that protrude from the surface of the retaining strip such that if the screw rod **108** rotates relative to the center piece **106** the one or more barbs dig into the inner surface of the center piece **106** and prevent rotation of the screw rod **108** relative to the center piece **106**. In another embodiment, an adhesive may be provided on the

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surface of the retaining strip to interact with the inner surface of the center piece **106** is also contemplated.

Referring to FIG. 4A, FIG. 4B and FIG. 4C, the threaded sleeves **110** are non-movably contained within interface ends **120** of the first and second tubular curved end pieces **102**, **104** and include bi-directional threads (i.e. both right-hand threads and left-hand threads) that are configured and sized to threadingly engage with the opposing-end left and right threads **126** of the screw rod **108**. It should be appreciated that the threaded sleeves **110** are sized and shaped to snugly fit within the interface ends **120** such that the sleeve notch **111** engages with the interface end notch **121**. Additionally, the threaded sleeves **110** include a collar **123** that is sized so that it will not fit within the interface ends **120**. Accordingly, the combination of the collar **123** and the sleeve notch/interface end notch **111**, **121** prevents that threaded sleeves **110** from rotating and from being pushed too far into the first and second tubular curved end pieces **102**, **104**. It should be appreciated that although the threaded sleeves **110** are shown as being constructed from two (2) portions that are associated via a hinging portion **125**, the threaded sleeves may be constructed without a hinged portion (in two non-connected pieces) or as a solid threaded sleeve **110**. It should be appreciated that the threaded sleeve is configured with internal right-hand threads and internal left-hand threads such that the threaded sleeve can threadingly engage a screw body having either right-hand threads or left-hand threads. This concept is discussed in greater detail in U.S. patent application Ser. No. 13/420,934, the contents of which are incorporated by reference herein in its entirety.

Referring to FIG. 5, the ferrules **112** are sized such that the ends of the center piece **106** fit snugly within and that the interface ends **120** of the first and second tubular curved end pieces **102**, **104** are allowed to move within. As such, the ferrules **112** are located to cover the joint formed between the first and second curved end pieces **102**, **104** and the center piece **106**.

Referring to FIG. 6A, FIG. 6B, and FIG. 6C, each of the mounting brackets **114** are essentially oblong in shape and include a bracket front **142** and a bracket rear **144**, wherein the bracket front **142** defines a socket cavity **146** and a pair of mounting pin openings **148** communicated with the socket cavity **146** and located on opposing sides of the socket cavity **146**. The socket cavity **146** is located to be offset from the center of the mounting bracket **114** toward one side of the mounting bracket **114** (i.e. proximate the front **142** of the bracket **114**). Moreover, the socket cavity **146** is sized and shaped to receive the bracket end **118** of the first and second curved end pieces **102**, **104**, such that when one of the first curved end piece **102** and second curved end piece **104** are located within the socket cavity **146**, the pair of mounting pin openings **148** and pair of rod mounting holes **124** are aligned. Referring to FIG. 6D, mounting pins **116** are provided and are sized and shaped so that they can be inserted through the pair of mounting pin openings **148** and pair of rod mounting holes **124** to securely retain the bracket end **118** of one of the first and second curved end pieces **102**, **104** therein.

Additionally, referring again to FIG. 6E, the bottom surface of the bracket front **142** and bracket rear **144** of the mounting brackets **114** may include a first footpad surface **152** and a second footpad surface **154**, respectfully. Accordingly, a first footpad **153** is located on the first footpad surface **152** and a second footpad **155** is located on the second footpad surface **154**, wherein the first footpad **153** may be sized to be smaller than the second footpad **155** (although the footpads **153**, **155** may be same size if desired). It should be appreciated that the first and second footpads **153**, **154** may be

securely attached to the first and second footpad surface **152**, **154**, respectively, via an adhesive or via a frictional mount. For example, referring again to FIG. 6E and FIG. 6F, the first and/or second footpads **153**, **155** may include protrusions **157** and the mounting bracket **114** may include footpad insert cavities **159**, where the protrusions **157** and footpad insert cavities **159** are sized and configured such that the protrusions **157** are inserted into the footpad insert cavities **159** and securely contained therein. Additionally, it should be appreciated that the first and second footpads **153**, **155** may be constructed from a rubber, plastic material or other material which increases the frictional engagement between the wall and the bracket **114**. Referring to FIG. 7A and FIG. 7B, it is contemplated that the mounting brackets **114** may also include a decorative trim outer cover **156** which may include a trim cover pin opening **161** and which may be configured to cover the mounting bracket **114** via a snap, clip, screw or adhesive.

Referring to the several figures, the shower rod assembly **100** is assembled by configuring the screw rod **108** such that the keyed first and second rod ends **130**, **132** are mated together to form a single screw rod **108** (See FIGS. 3A-3F). If the adapter **134** is used, then the keyed first and second rod ends **130**, **132** are associated with the appropriately keyed first and second adapter ends **136**, **138**. The screw rod **108** is then located within the center piece tubing **106** such that the screw rod is snugly contained therein to be proximate the center of the center piece **106**.

Referring to FIG. 8A and FIG. 8B, the threaded sleeves **110**, which are sized and shaped to snugly fit into the interface ends **120** of the first and second curved end pieces **102**, **104** are located therein such that the sleeve notch **111** is located within the interface end notch **121** and the collar **123** is pressed against the interface end **120**. The ferrules **112** are then snugly associated with the ends of the center piece **106** to cover the ends of the center piece **106**. The interface end **120** of the first curved end piece **102** is inserted into one end of the center piece **106** such that one end of the screw rod **108** is located within (or proximate to) the threaded sleeve **110** of the first curved end piece **102** and the interface end **120** of the second curved end piece **104** is inserted into the other end of the center piece **106** such that the other end of the screw rod **108** is located within (or proximate to) the threaded sleeve **110** of the second curved end piece **104**. It should be appreciated that the ferrules **112** are also covering the joint formed between the interface ends **120** of the first and second curved end piece **102**, **104** and the center piece **106**.

The center piece **106** is rotated to cause the ends of the screw rod **108** to threadingly engage with the threads of the threaded sleeves **110** of the first and second curved end pieces **102**, **104**. In this way, the length of the curved shower rod **100** is adjustable by rotating the center piece **106**. This is because when the center piece **106** is rotated relative to the first and second curved end pieces **102**, **104** the screw rod **108** rotates as well. When the screw rod **108** is rotated in one direction, the threaded ends of the screw rod **108** threadingly engage the threads within the threaded sleeves **110** to cause the first and second curved end pieces **102**, **104** to slide within the center piece **106** and move outwardly away from the center of the screw rod **108**. When the screw rod **108** is rotated in the opposite direction, the threaded ends of the screw rod **108** threadingly engage the threads of the threaded sleeves **110** to cause the first and second curved end pieces **102**, **104** to slide within the center piece **106** and move inwardly toward the center of the screw rod **108**. In this manner, the length of the curved shower rod **100** is adjusted.

Referring to the several figures and FIG. 9, when installed in a shower, the bracket end **118** of the first and second curved end pieces **102**, **104** are located within the socket **146** of the mounting brackets **114** such that the rod mounting holes **124** and mounting pin openings **148** are aligned. The bracket pins **116** are located within the rod mounting holes **124** and mounting pin openings **148**. This prevents rotation of the first and second curved end pieces **102**, **104** about the X-axis relative to the mounting brackets **114**. The mounting brackets **114** are placed against or proximate opposing shower walls **158** of the shower stall. The center piece **106** is rotated relative to the first and second curved end pieces **102**, **104** to cause the first and second curved end pieces **102**, **104** to move outwardly away from the center piece **106** and toward the opposing shower walls **158**. The center piece **106** is rotated until the first and second foot pads **152**, **154** are pressing against the opposing shower walls **158** with enough force to keep the mounting brackets **114** from rotating about the X-axis.

Referring to FIG. 10 which shows a cross Section D-D through the assembly shown in FIG. 9, the moment arm relationship is illustrated. The load on the curved rod (for example, from a shower curtain) which is typically equally distributed along part or all of the length of the rod is represented by a single force vector F_L in this simplified view. The force F_L is displaced in the Y(+) direction a distance LA from the X-axis that runs between the opposing sockets **146** of the opposing mounting brackets **114** (LA is the proximal distance between the center piece **106** and the X-axis).

In order to remain in place without rotation, the mounting bracket **114** must counter the forces F_L applied by the curtain and pulling of a user. Thus, each typical mounting bracket **114** must provide an opposing vertical force V in the Z-axis direction to resist the vertical component of force F_L and each bracket **114** must also provide a moment MV in the y-z plane to resist the torque created at socket **146** in the mounting bracket **114**, where the end of the rod is located. These are accomplished via frictional engagement between the mounting bracket **114** (more specifically the first and second footpads **153**, **155**) and the shower wall **158**. One way to create moment MV and resist the torque created at the socket **146** involves the length LB of the mounting bracket **114** (i.e. from the Z-axis plane) in the Y(+) direction being greater than the length LC of the mounting bracket **114** (i.e. from the Z-axis plane) in the Y(-) direction. It should be appreciated that in one embodiment the length LC from the socket **146** to the rear end **144** of the mounting bracket **114**, i.e., the length LC, is about half of the length of the distance LB to the front end **162** of the mounting bracket **114**.

In the generality of the invention, the length LC from the socket **146** to the rear end **144** of the mounting bracket **114**, in the Y(-) direction, could be longer than shown, and it could be equal or greater than the length LB. However, in an exemplary embodiment, the mounting bracket **114** is asymmetrical, as described, to save material and avoid possible difficulties in mating an overly-long bracket with uneven shower wall surfaces.

It should be further appreciated that brackets **114** can be subject to torsional forces in the horizontal plane as well. Referring to FIG. 11, a top down view illustrating how the typical bracket **114** may engage a shower wall **158** is shown, where the bracket **114** is pressing the first and second footpads **153**, **155** against the shower wall **158**. The vector T represents the pressing force created by the action of screw rod **108**, which is located within the center piece tube **106**. Force T creates a moment MH in the x-y (horizontal) plane from bracket rear end **144** toward bracket front end **142**. To the extent the bracket ends **118** of curved end pieces **102**, **104**

fits snugly (or tightly) within the socket cavity **146**, the moment MH tends to cause the rear end **144** of the bracket **114** to pull away from the shower wall **158**, as illustrated by the phantom view P, which is exaggerated here for purposes of illustration.

It is desirable for the bracket **114** (and the first and second footpads **153**, **155** of the bracket **114**) to maintain contact with the shower wall **158** at more than only the front end **142** of the bracket **114**, i.e. at the front end **142** and the rear end **144** of the bracket **114**, so that the resistive movement MV is effectively provided. Thus, in an embodiment of the invention, the first footpad **153** at the front end **142** of the bracket **114** may be made smaller, thicker or of a different material than the second footpad **155** at the rear end **144** of the bracket **114**, so that the bracket **114** remains in contact despite the lifting tendency created by moment MH.

In an additional embodiment, or in conjunction with the foregoing, the fit of the bracket end **118** of curved end pieces **102**, **104** in the socket cavity **146** may be "sloppy" or loose. And the fit of the bracket pin **116** may also be "sloppy" or loose, as by means of oversized or elongated rod mounting holes **124** and mounting pin openings **148** relative to the diameter of the bracket pin **116**. Thus, some bending of the curved end pieces **102**, **104** could be accommodated without a lot of lifting effect.

It should also be appreciated that the first and second footpads **153**, **155** of the brackets **114** may include an adhesive portion to give better frictional resistance between the first and second footpads **153**, **155** and the shower wall **158**. Also, the brackets **114** may be screwed to the shower wall **158**. In that case, the relationship between the bracket dimensions and the offset of the shower rod will enable less stress to be applied to the screws, thereby lessening wear on the brackets **114** and/or the chance of fracturing on the shower wall **158** or will enable the use of smaller dimension screws, etc.

It is contemplated that the first and second curved end pieces **102**, **104**, and/or the center piece **106** may be constructed from a metallic material (for example, a metal having a wall thickness of about 0.02 inch). However, any material suitable to the desired end purpose, such as hard plastic or a composite material may be used. Furthermore, screw rod **108** may be constructed from metal, POM (acrylic) resin, metal, and/or some other suitable plastic and/or composite material. Additionally, the brackets **114** may be constructed from a strong metal, plastic and/or composite material, for instance ABS resin and the first and second footpads **153**, **155** may be constructed from a rubber material, a plastic material or any other suitable material. It should be appreciated that in an exemplary embodiment, the first and second footpads **153**, **155** have a Shore A Durometer of about 50-60.

In an additional embodiment, the shower rod **100** may include curved end pieces **102**, **104** and a socket **146** that are keyed together to prevent rotation (for example, they may be square, triangle, hexagonal, etc. shaped) of the curved end pieces **102**, **104** within the socket cavity **146**. In this configuration, no mounting pin is needed and the rod is held in place by the structure defining the socket cavity **146**. Additionally, in still yet another embodiment, fine adjustment screws **150** (or clips) may be provided to apply additional force to the first and second footpads **153**, **155** and thus the shower wall **158** (See FIG. 12). It should be appreciated that the components of the shower rod **100** may be of any size suitable to the desired end purpose and thus may be of varying sizes that are suitable to varying shower enclosures. For example, referring to FIG. 13A, FIG. 13B and FIG. 13C, one embodiment of the curved shower rod assembly is shown where the first and second curved end pieces **102**, **104** may have a length RL of about

27¾ inches (measured from bracket end **118** to interface end **120**), where the bracket end **118** may have a length BE of about 2 inches and the interface end **120** may have a length IE of about 7¾ inches. Moreover, the center piece **106** may have a length CL of about 16 inches and the screw rod **108** may have a length SR of about 12½ inches, where the threaded portions of the screw rod **108** may have a length TP of about 6 inches. Furthermore, the mounting brackets **114** may have a bracket length BL of about 6½ inches and a bracket width BW of about 1½ inches, where the socket **146** may have a socket length SL of about 1 inch and a socket width SD of about 0.9 inches (or the socket **146** may be circular). Additionally, the socket **146** may be located from bracket front by A distance SBF of about 1.4 inches.

While the invention has been described with reference to an exemplary embodiment, it should be understood by those skilled in the art that various changes may be made and equivalents may be substituted for elements thereof without departing from the scope of the invention. In addition, many modifications may be made to adapt a particular situation or material to the teachings of the invention without departing from the scope thereof. Therefore, it is intended that the invention not be limited to the particular embodiment disclosed as the best mode contemplated for carrying out this invention, but that the invention will include all embodiments falling within the scope of the specification/figures and any appended claims. Moreover, unless specifically stated any use of the terms first, second, etc. do not denote any order or importance, but rather the terms first, second, etc. are used to distinguish one element from another.

We claim:

1. A curved shower rod assembly, comprising:

- a first end rod and a second end rod, wherein each of the first end rod and second end rod include a rod bracket end and a rod interface end, the rod bracket end and rod interface end being separated by a rod curved portion and wherein the rod interface end is hollow;
- a center rod, wherein the center rod is hollow and includes a center rod inner diameter sized to movably contain the rod interface ends;
- a screw rod having a first end with right-hand threads and a second end with left-hand threads, wherein the screw rod is securely contained within the center rod;
- a first threaded sleeve and a second threaded sleeve, wherein the first and second threaded sleeve includes bi-directional internal threads, wherein the first threaded sleeve is located within the rod interface end of the first end rod and the second threaded sleeve is located within the rod interface end of the second end rod, and wherein the rod interface end of the first end rod is located within the center rod such that the first threaded sleeve is proximate the first end of the screw rod, and the rod interface end of the second end rod is located within the center rod such that the second threaded sleeve is proximate the second end of the screw rod; and
- a first mounting bracket and a second mounting bracket, wherein each of the first and second mounting brackets are oblong in shape and include a bracket front, a bracket rear, a bracket top and a bracket bottom, the bracket top defining a socket cavity configured to contain the rod bracket end of the first and second end rod, such that the first and second end rods are configured to be substantially perpendicular to the shower wall and wherein the socket cavity is offset

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from the center of the first and second mounting bracket to be located proximate the bracket front, and the bracket bottom including a plurality of footpads.

2. The curved shower rod assembly of claim 1, wherein the plurality of footpads include a first footpad and a second footpad, the first footpad being located proximate the bracket front and the second footpad being located proximate the bracket rear.

3. The curved shower rod assembly of claim 1, wherein the bracket top further defines a plurality of pin cavities communicated with the socket cavity and configured to be aligned with each other.

4. The curved shower rod assembly of claim 3, wherein the rod bracket end of the first and second end rods include a plurality of rod mounting holes aligned with each other to be located on opposing walls of the first and second end rods, wherein when the rod bracket end of the first and second end rods are located within the socket cavity, the plural of rod mounting holes are aligned with the plurality of pin cavities.

5. The curved shower rod assembly of claim 1, further comprising a first mounting pin and a second mounting pin, wherein the first mounting pin is associated with the first mounting bracket and first end rod to be located within the plurality of mounting holes and plurality of pin cavities and wherein the second mounting pin is associated with the second mounting bracket and second end rod to be located within the plurality of mounting holes and plurality of pin cavities.

6. The curved shower rod assembly of claim 1, wherein the bracket end and rod interface end of the first and second end rods are substantially straight.

7. The curved shower rod assembly of claim 1, wherein the screw rod includes a screw rod center portion that separates the first end from the second end, and wherein the screw rod center portion is sized to frictionally interact with the center rod when located within the center rod.

8. The curved shower rod assembly of claim 1, further comprising a plurality of ferrules, wherein the plurality of ferrules are configured to frictionally contain the center rod and located to cover the joint formed between the center rod and the bracket interface end of the first and second end rods.

9. A curved shower rod, comprising:

a first end rod and a second end rod, wherein each of the first end rod and second end rod include a rod bracket end and a rod interface end, the rod bracket end and rod interface end being separated by a rod curved portion and wherein the rod interface end is hollow;

a center rod, wherein the center rod is hollow and includes a center rod inner diameter sized to movably contain the rod interface ends;

a screw rod having a first end with right-hand threads and a second end with left-hand threads, wherein the screw rod is securely contained within the center rod;

a first threaded sleeve and a second threaded sleeve, the first and second threaded sleeves having bi-directional internal threads,

wherein the first threaded sleeve is located within the rod interface end of the first end rod and the second threaded sleeve is located within the rod interface end of the second end rod, and

wherein the rod interface end of the first end rod is located within the center rod such that the first threaded sleeve and the first end of the screw rod are threadingly associated and the rod interface end of the second end rod is located within the center rod such that the second threaded sleeve and the second end of the screw rod are threadingly associated.

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10. The curved shower rod of claim 9, wherein the screw rod includes a screw rod center portion that separates the first end from the second end, and wherein the screw rod center portion is sized to frictionally interact with the center rod when located within the center rod.

11. The curved shower rod of claim 9, wherein the bracket end and rod interface end of the first and second end rods are substantially straight.

12. The curved shower rod of claim 9, wherein the first threaded sleeve and second threaded sleeve are frictionally contained within the bracket end of the first and second end rods.

13. The curved shower rod of claim 8, wherein the bracket end of the first and second end rods are configured to mate with a socket cavity of a mounting bracket, wherein the mounting bracket is oblong in shape and includes a bracket front, a bracket rear, a bracket top and a bracket bottom, wherein the bracket top defines a socket cavity and the bracket bottom includes a first footpad and a second footpad, wherein the socket cavity is located proximate the bracket front and wherein the first footpad is located proximate the bracket front and the second footpad is located proximate the bracket rear.

14. A mounting bracket for mounting a curved shower rod within a shower enclosure between a pair of shower walls, wherein the curved shower rod includes a screw rod having a first end with right-hand threads and a second end with left-hand threads, wherein the screw rod is securely contained within the curved shower rod, the curved shower rod mounting bracket comprising:

a first mounting bracket, and

a second mounting bracket, wherein each of the first mounting bracket and second mounting bracket are oblong in shape and includes a bracket front, a bracket rear, a bracket top and a bracket bottom, the bracket top defining a socket cavity and the bracket bottom including a first footpad and a second footpad,

the socket cavity being located proximate the bracket front and configured to contain the rod bracket end of a first end rod of a curved shower rod and a second end rod of a curved shower rod, such that the first and second end rods are configured to be substantially perpendicular to the shower walls, and

the first footpad being located proximate the bracket front and the second footpad being located proximate the bracket rear.

15. The curved shower rod mounting bracket of claim 14, wherein the first footpad is larger than the second footpad.

16. The curved shower rod mounting bracket of claim 14, wherein the bracket top defines a plurality of pin cavities communicated with the socket cavity and aligned with each other.

17. The curved shower rod mounting bracket of claim 16, wherein the rod bracket end of the first and second end rods include a plurality of rod mounting holes located on opposing walls of the first and second end rods and aligned with each other, wherein when the rod bracket end of the first and second end rods are located within the socket cavity, the plural of rod mounting holes are aligned with the plurality of pin cavities.

18. The curved shower rod mounting bracket of claim 14, further comprising a plurality of mounting bracket screw holes configured to communicate the bracket top with the bracket bottom.

19. The curved shower rod mounting bracket of claim 14, further comprising a bracket cover, wherein the bracket cover is configured to engage the mounting bracket to securely

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cover the mounting bracket, wherein the bracket cover defines a trim cover pin opening located such that when bracket cover is associated with the mounting bracket, the trim cover pin opening is aligned with the mounting pin opening.

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